Strategic Plan for the Academic Component of the Army National Guard Distance Learning Demonstration

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This document outlines the overall strategy for implementing an academic component for distance learning (DL) in the Army National Guard (NG). This plan support an initiate to develop a regional demonstration network for DL that will serve as a prototype for the creation of a national NG DL network. The prototype will allow the NG to evaluate an interactive technology network that links NG facilities in a demonstration region encompassing Pennsylvania Maryland, Virginia, West Virginia and the District of Columbia, with an emphasis on shared usage by the NG and local community.

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EXECUTIVE SUMMARY

This document outlines the overall strategy for implementing an academic component for distance learning (DL) in the Army National Guard (NG). This plans supports an initiative to develop a regional demonstration network for DL that will serve as a prototype for the creation of a national NG DL network. The prototype will allow the NG to evaluate an interactive technology network that links NG facilities in a demonstration region encompassing Pennsylvania, Maryland, Virginia, West Virginia, and the District of Columbia, with an emphasis on shared usage by the NG and the local community.

Introduction. The purpose of the DL network is to enhance the readiness of the NG and the Total Army. Chapter 1 describes the training challenges that DL can address, the objectives of the initiative, and its authorization.

Distance learning paradigm. Chapter 2 elaborates on how DL will accomplish the training goal. It outlines a paradigm for NG DL that leverages the use of existing distance learning courseware and existing training facilities.

Courseware. Chapter 3 presents information on training needs in the demonstration region. It outlines a process for selecting DL courseware, and analyzes the training needs information to recommend some courses to consider for DL conversion. It describes the courseware that the DL can deliver, and the criteria for targeting and prioritizing courses for DL. The training need data combine information from states in the demonstration region and information from the National Guard Bureau.

Distance learning sites and instructional features. Chapter 4 presents information on needs for DL sites in the demonstration region. It defines kinds of sites by their instructional features, and the capabilities of the features for training.

Shared usage management. Chapter 5 explains how this DL initiative will enhance community quality of life. A by-product of the NG DL initiative will be enhanced educational and training opportunities for the community. This chapter discusses a two-phased model of shared usage management. The first priority in the shared-use model is training for readiness of the NG units.

Implementation schedule for the academic component of the DL network. Chapter 6 suggests a schedule for implementing the demonstration network, with emphasis on courseware. As funding becomes available it can be overlaid against this template to determine where best to apply resources.

The National Defense Authorization Act for 1995 directed the National Guard Bureau to establish a DL program. The initial demonstration must develop and evaluate an interactive technology network that links Army NG facilities in the mid-Atlantic region, forming a DL Regional Network. The demonstration region covers Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia. In acknowledgment of the central role that the NG plays in communities across the nation, this plan places an emphasis on shared usage by the Army NG and civilian bodies to provide opportunities for continuing education to the widest possible audience.

This strategy supports several Department of Defense (DoD), Department of the Army (DA), and Training and Doctrine Command (TRADOC) efforts to increase training effectiveness in the Reserve Components. These initiatives include the Defense Information System Network (DISN) Program Strategy, Force XXI, Total Army School System (TASS), *Total Army Distance Learning Plan*, and TRADOC's Soldier Training Strategy.

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Chapter 1
INTRODUCTION

"Continuing resource constraints will demand unprecedented productivity. We need to find new and innovative ways to help ourselves. We have a window of opportunity to make changes that make us more efficient. We must find smarter ways to do business, streamline our management processes, reduce overhead, leverage outside resources, and use what we have more efficiently in order to be more effective."

General Dennis J. Reimer, Chief of Staff, US Army
July 28, 1995 Assessment and Vision Letter

In 1973, the Department of Defense adopted a Total Force Policy that sought to integrate the Active and Reserve Component Forces. With the advent of the All Volunteer Force, it was recognized that the draft could no longer be used as an immediate means to augment the active duty Services in time of need. The role of the Reserve Components (RCs) became that of a first-line back up to the full-time Army, Navy, Air Force, and Marine Corps. During the 1980s, as the size of the active forces remained relatively stable and the number of mission requirements increased, the RCs became more visible partners in the nation's defense. Naturally, questions were raised about their readiness to assume a more vital role. As the largest RC, the Army National Guard (NG) received its share of this scrutiny.

The term "readiness" is defined in many different ways and from many different perspectives. On an individual level this concept encompasses such factors as job knowledge and the ability to perform Military Occupational Specialty (MOS) duties. Unit readiness involves members working together as a team to accomplish mission objectives, using unit equipment and skilled personnel. This plan emphasizes training for MOS duties and other individual soldier skills, which are more appropriate for distance learning than training of collective skills. And from a Total Force perspective the concern lies in such factors as the ability to manage multiple missions in various parts of the world.

Training Challenges

Training is integral to all levels of readiness. For the most part, the Active Duty forces recruit from the pool of persons 17 to 24 years of age, which was also the source of over one-third of NG accessions in FY1994.[1] Many of these young people enter the military with little in the way of relevant job experience or skills. Training is essential to build a well-qualified force and is the primary focus of active duty units when they are not deployed. The popular concept of reserve service is that individuals simply transfer from active duty to

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[1] Deborah R. Lee, Assistant Secretary of Defense (RA) [personal communication], (January 4, 1996). Memorandum for Deputy Secretary of Defense. Subject: PDM II - Directed study on Distance Learning Technologies - Action Memorandum.

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a reserve unit where they perform the same job as they did as full-time soldiers. The reality is that only about one-third of NG personnel are initially matched with their active-duty MOS. This mismatch results from the fact that individuals typically "attach" themselves to NG units near their place of residence. The nature of that unit and the availability of positions in it determine whether a recently separated active duty soldier can be matched with his or her former career field. The statistics suggest that in most cases this match does not occur.

Although 63% of Total Army personnel belong to the RCs, 39% of those were not MOS qualified (MOSQ) for their current duty positions.[2] This portion compares to four percent of active duty members who were not qualified. Further, fewer than half (41%) of those who were unqualified were scheduled to attend resident training in FY95, with lack of funding being the primary obstacle in this regard.

Compared to the active force, the RCs face greater challenges in training to maintain readiness; the challenges include:

1. Restraints on the time allowed for training. The Reserves are made up of "part-time" servicemembers. A Reservist in the NG has weekend duty once a month and a two-week active duty period, typically scheduled during the summer. This commitment is a fraction of the time allowed for Regular Army training, and is difficult to supplement given the civilian commitments of RC soldiers to job and family. One estimate puts the amount of time available for training in the Reserves at one-fifth of that for active duty members.[3]

2. Budgetary constraints. For many RC members, training in their MOS requires attendance at resident instructional settings maintained by the active Army. Funding to maintain someone in this status is often limited, particularly during times of downsizing and budget reductions. The annual cost for travel and per diem to allow Army RC personnel to attend resident training is over 32 million dollars.[4] This expense, in combination with the limited time availability of RC personnel, often preclude this option. Thus, individuals often take considerably longer to receive the training required to become qualified in their assigned or chosen specialty. Budget considerations also play a role in terms of training facilities and up-to-date job-related equipment. Much of the infrastructure available to them consists of "hand-me-downs" from the Active Duty Forces. Efforts have been undertaken to correct the problem. However, solutions can increase the need for training, since modernization of the NG means that the knowledge and skills of personnel must be updated along with their equipment and other tools.

3. Personnel turbulence. On a unit level, the RCs face difficulties with both turnover and transfers of individuals. Unlike the Active Duty forces where personnel can be

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[2] Ibid.

[3] Ibid.

[4] Ibid.

assigned to a given location or unit as needed, NG soldiers select their own units based on geographic and other concerns. Therefore, vacancies occur not only because of attrition from service, but also because individuals move to other assignments to further their careers. Lack of control over personnel makes it difficult for the RCs to maintain a pipeline of individuals ready to fill positions as needed. When key positions in a unit remain unfilled or occupied by unqualified personnel, the unit itself can be judged unfit for deployment. In times of need, this problem can result in a "rush to train" or the shifting of qualified individuals between units to piece together those that meet the requirements for active duty service. In either case, the result is less than ideal.

Training Solutions

Given budgetary constraints and restrictions on the availability of personnel for training, the answer to the problem of unacceptably low MOSQ rates appears to lie in the ability to provide high quality training in a flexible, widely distributed manner while holding down costs to the extent possible. In the past, this individual skill mandate has been met primarily through correspondence courses. This solution has been found wanting for several reasons. Course completion rates for standard paper-and-pencil correspondence instruction have been found to be significantly lower than in-resident training.[5] Among the possible causes for this outcome are the lack of timely feedback regarding progress, the inability to obtain input regarding problems and questions, and the non-involving nature of the instruction. Further, as the technology explosion in the Armed Services as a whole continues, the ability to communicate the needed concepts, strategies, and procedures required to perform many jobs will simply not be possible given the restrictions of manuals and the lack of student-instructor interface.

Technological advances offer a partial solution to the NG training problems for MOSQ and other individual skills. Terrestrial-or satellite-based systems allow one- or two-way video and audio connections, providing delivery of training to a widely dispersed audience in a flexible manner. Several demonstration projects using DL technology have shown favorable results. Students find the experience to be valuable and perform at least as well as those trained in residence.[6, 7] Although the initial investment in hardware and software to link various sites can be substantial, the long-term savings and positive impact on readiness have been shown to make this strategy cost effective.[8]

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[5] Allen Corporation of America (1986). Final report for determining the feasibility of training via computer teleconference. Alexandria, VA: Author.

[6] Redding, G.A., & Fletcher, J.D. (1993). *Technical and administrative issues in distributed training technology* (NATO Research Study Group 16). Alexandria, VA: Institute for Defense Analysis.

[7] Phelps, R.H., Ashworth, R.L., & Hahn, H.A. (1991). *Cost and effectiveness of home study using asynchronous computer conferencing for reserve component training* (Research Report 1602).

[8] Deborah R. Lee, (1996).

The traditional method of training soldiers often has been to move the soldier to the training site whether it was a classroom or a field location to accomplish the required training. DL can largely reverse that age old method by delivering training directly to soldiers at regional training centers, at their local armories and, ultimately, directly into their homes.

Authorization

The National Defense Authorization Act for 1995 directed the National Guard Bureau to establish a DL program. The initial demonstration must develop and evaluate an interactive technology network that links Army NG facilities in the mid-Atlantic region, forming a DL Regional Network (DL RN). The demonstration region covers Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia. In acknowledgment of the central role that the NG plays in communities across the nation, this plan places an emphasis on shared usage by the Army NG and civilian bodies to provide opportunities for continuing education to the widest possible audience.

Purpose

The purpose of the regional network for DL in the NG is to provide high quality education and training to maintain readiness. Objectives include improving training efficiency and effectiveness by harnessing appropriate technology to deliver quality instruction, and ensuring efficient use of training resources by increasing the use of instructional technology. The program aims to develop and maintain individual and collective skills that NG personnel need to deploy rapidly and to accomplish unit missions. DL will improve readiness of the NG and the Total Army in the following ways:

- **Providing improved access to training.** The nationwide geographic dispersion of soldiers when combined with the decline of training and travel budgets has limited the number of soldiers who can travel to training institutions. DL can overcome geographic barriers.

- **Allowing more flexible participation for soldiers.** Work and family commitments limit the available time Reserve Component soldiers can devote to military training requirements. DL allows soldiers to participate at times convenient to their personal and work schedules rather than only at times and in places specified by traditional training institutions.

- **Allowing soldiers greater learning options.** DL employs a range of instructional tools. Interactive television, videoconferencing, audiographics, on-line computer mediated training, and CD-ROM-based technologies present instructors and soldiers with many options for on-demand and self-directed training opportunities outside traditional learning boundaries.

- **Reducing training, travel and TDY costs.** While DL has substantial start-up costs, higher student throughput rates can lead to earlier than expected cost

savings and cost avoidance. The Air Force has already demonstrated this cost benefit and is expanding its DL capabilities.[9]

This strategy supports several Department of Defense (DoD), Department of the Army (DA), and Training and Doctrine Command (TRADOC) efforts to increase training effectiveness in the Reserve Components. These initiatives include the Defense Information System Network (DISN) Program Strategy, Force XXI, Total Army School System (TASS), *Total Army Distance Learning Plan*, and TRADOC's Soldier Training Strategy.

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[9] Ibid.

Chapter 2
AN NG DISTANCE LEARNING PARADIGM

The quality of training . . . must not change, <u>but</u> the means and techniques must.

General Hartzog
CG TRADOC

Distance Learning can provide training to the soldier, leader, and unit when and where it is needed. This training can be accomplished by traditional means such as correspondence courses or by technologies that can link NG personnel into a virtual learning community and provide a classroom without walls.

The harnessing of appropriate technology to meet the training needs offers exciting possibilities to support the diverse mission of the NG. In addition to technology's capability to bring high quality instruction into the armories and homes of soldiers, it can provide high fidelity simulation of situations, conditions, and circumstances that NG personnel may face in mission execution.

DL also enhances the NG's ability to meet its obligations to community, state, and nation. The mission of the NG is unique in that it is charged to serve both state and nation. The NG's state mission is to provide organized units, equipped and trained, to function effectively in the protection of life and property and the preservation of peace, order, and public safety. In peacetime, NG personnel are really extensions of all levels of government. NG soldiers serve as part of community structures -- responding to emergencies, natural disasters, and other civic needs. In wartime, NG soldiers must be ready to be deployed and serve along side AC forces.

NG facilities serve community needs and support the national defense. In addition to housing NG units, local armories are used for community activities like classes, blood drives, and special programs. Both NG personnel and facilities are community assets. In creating a DL network, NG bases its paradigm on the NG's established model of public service and national defense. While the purpose of the NG DL network is to develop and maintain individual and collective knowledge, skills, and abilities of its force through training, the Distance Learning capabilities also becomes part of community resources that advance the education of local residents.

This model of shared usage ensures that the public resources expended for DL are fully exploited to benefit the community, state, and nation. It also allows the NG to take advantage of commercial, off-the-shelf courseware and technologies to advance the training and readiness of its personnel.

The introduction of DL to the NG represents a major investment of resources and a change in training infrastructure. The transition from resident and platform training to DL must be guided by strategic planning that considers both the situation and expectations for the training network.

Situation

The role of the NG has expanded over the last twenty years. Many vital combat support and service support functions have been placed with the NG, and NG must act to ensure that its personnel are ready to assume expanded responsibilities. The NG must meet formidable training challenges in attaining and maintaining readiness levels comparable to those of the Active Component (AC). These challenges stem from the unique environment in which the NG must train. This environment is characterized by small, geographically dispersed units, shortages of mission-essential equipment, significant structural and personnel turbulence, restricted access to range and maneuver areas, and minimal time to train.

Limited time is possibly the most critical constraint. NG training time is about 20% of AC training time and is distributed across the calendar year. Because time is limited and discontinuous, NG training must be made as effective and efficient as possible. Unfortunately, a General Accounting Office (GAO) study[10] that compared readiness of NG soldiers to AC forces during Operation Desert Storm found that the NG units did not possess the same level of readiness as their AC counterparts. To improve outcomes for NG personnel, training issues that must be resolved include:

- Current focus on resident training.

- Limited capability to respond to short-notice training readiness requirements or deploying units train-up requirements.

- Nonstandard training across states.

- Backlog of non-military occupational specialty qualified (non-MOSQ) soldiers who are not eligible for deployment.

- Extended periods between training sessions that negatively impact on retention.[11]

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[10] Government Accounting Office (1991). *National Guard, peacetime training did not adequately prepare combat brigades for Gulf War*. Washington, DC: Author. Report GAO/NSIAD-91-263.

[11] Ibid.

Expectations

DL has the potential to alleviate training problems and help translate national defense policy into reality. The delivery of training via DL can support the following expectations:

- **Advanced state of readiness.** The readiness of the NG allows the Army to apply a trained and overwhelming force at the right time and place. Since the RC now comprise over half of the Army, the readiness of the NG is now more important than ever.

- **Rapid deployment.** The NG's role in the national defense mandates its ability to deploy rapidly to a variety of theaters of operations. Rapid deployment by the NG allows the nation to protect its interests and act decisively.

- **Diversified missions.** The NG must be trained and ready to perform successfully across the continuum of operations at short notice. These missions require individual soldiers and units that are capable of performing a variety of tasks and are able to rapidly change from one type of mission to another.

Foundation for the Distance Learning Paradigm

The full value of DL to the training environment can only be realized through planned integration of Distance Learning technologies with current operations and processes. Developing and implementing a DL network does not equate with the dismantling of existing training capabilities. The "basic training matrix" remains intact, and the DL network can make this training matrix more accessible and more flexible. The matrix includes the soldier who requires training, the subject matter expert (SME), the instructor, and the proponent school that develops and packages training. This integration enables DL that is:

- **Needs driven.** The development and implementation of the DL network is designed to meet the training needs (both immediate and long range) of the NG. DL allows training to focus on the specific tasks and individuals where there are identified deficiencies in performance. Thus, DL is particularly useful for MOSQ training and other individual training such as leadership skills and individual refresher training.

- **Content focused.** A chief consideration is that the network convey high quality training to soldiers and units using appropriate technology. The goal of the network is that the technology becomes transparent. The instruction can focus on the educational content, ensuring that the soldier is trained according to required tasks, conditions, and standards. DL is the servant that allows delivery, student-instructor interaction, and creation of a learning community without geographic boundaries. Therefore, the accessibility of content-focused training is enhanced.

- **Learner centered.** The training delivered via the DL network is designed to meet individual needs of NG personnel. Soldiers expect high quality, realistic, and stimulating training. They require readily accessible information to train beyond basic standards. They expect 'hands-on,' realistic practical exercises to supplement lectures. They want access to SMEs who can provide real-time answers and on-line help. DL provides a medium to meet these requirements.

- **Responsive to demand.** DL can improve MOSQ rates since soldiers can receive training for their current MOS without being away from their communities or civilian jobs for extended periods of time. In addition, the wide dispersion of NG personnel currently places severe constraints on delivering training. Through its capacity to deliver training virtually anywhere or anytime, DL can support soldier preparation that is more relevant and can be repeated to enhance skill maintenance.

- **Efficient.** DL allows efficient use of the most limited resources among NG personnel -- time. DL can be available at locations that are convenient to NG personnel, and training can be scheduled at times (e.g., evenings and weekends) that personnel have available for training. A goal is to have a DL site within one hour of each soldier.

- **Flexible.** The diversity of the mission, tasks, and responsibilities of NG require a DL network that may accommodate a variety of training delivery mechanisms. By taking advantage of existing telecommunications linkages and sites sponsored by the DoD, other Federal agencies, and states, the NG DL network can be used to develop, deliver, share, and manage training for individual soldiers, their units, and communities, as well as local, state, and national institutions.

Paradigm for an NG Distance Learning Network

Both training and DL are dynamic fields. A successful paradigm for DL requires the NG to participate with other Services and Federal agencies, as well as state governments, industry, and educational institutions and systems to exchange knowledge, share lessons-learned, and collaborate on future planning.

The development of the demonstration network is currently underway and involves the states of Pennsylvania, Maryland, Virginia, and West Virginia, as well as the District of Columbia. As a result of this demonstration project, the NG will perform the following:

- **Define and institutionalize DL policies, procedures, and responsibilities.** The regional demonstration network provides the proving ground for the establishment of appropriate policies and responsibilities by offering a pilot test for DL and shared usage management. The regional demonstration network will provide insight on establishing procedures that guide and manage the dynamic aspects of training, emerging technology, and community relations.

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- **Link proponents and the field through a common operating environment.** Before implementing the DL network, operational and technical standards must be identified, and sites must be selected for DL classrooms. The NGB is working with state training officers to identify and rank possible DL sites. A goal of this process will be to place a site within a hour's drive for NG soldiers. Each site will be equipped with DL capabilities based on the prevailing commercial standard. The use of a commercial standard will ensure the ability of sites to maintain, operate, and repair equipment on site and should minimize 'down time' related to equipment problems.

- **Identify and prepare institutional training courses.** Courses must be identified, ranked, and funded for conversion to DL applications. Selection of courseware must be based on value added to the NG (e.g., increased readiness, deployability), learner requirements, cost, and adaptability to DL. The NGB and ARI are working together to procure courseware for the initial demonstration of the DL network and plan for the transfer of instructional tools developed under the Computer-Assisted Education and Training Initiative (CAETI).

- **Integrate evaluation of training/assessment of students into the training process.** Training should involve a continuous loop of evaluating the effectiveness of training and of providing learners with feedback on their progress toward training goals. The NG DL paradigm will permit the field to provide rapid feedback to the proponents on both the quality and relevance of the training provided.

Anticipated Outcome

The creation of a DL network can support reconfiguration of the training infrastructure of the NG. The successful implementation of an NG DL network can provide the NG the means to achieve standardization, support training strategies, meet projected mission requirements, and execute a broad range of missions anywhere in the world. The network has the potential to improve the quality of training by changing the means and techniques used in its delivery.

Chapter 3
DISTANCE LEARNING COURSEWARE

...if you have poor instruction and you use distance learning technologies, you will have poor instruction distributed to hundreds of persons.

Investment in DL hardware will only payoff given a corresponding investment toward developing the courseware to deliver through the network. Thus, a top priority is determining those courses to convert or develop for DL. This issue can be approached at three levels, including course conversion and development for: (a) the demonstration region, (b) the entire NG in the short term, and (c) the NG in the long-term. The criteria for selecting instructional content are largely the same in each case.

Some criteria for selecting courseware for DL are especially important for the NG. One criterion that is key to NG training is geographic dispersion. Large geographic dispersion, especially for a large training audience, produces a very favorable cost ratio when compared to conventional classrooms and the need for students to travel to the training location. However, NG training officers report that one of their problems is the training of soldiers in low-density MOS; DL can offer solutions for these problems also. Another criterion is the need for hands-on performance in training or testing; however, this need may be handled by assistant instructors or other training strategies.

Other criteria apply to the whole Army. The *Total Army Distance Learning Plan* lists a number of criteria that TRADOC applied in ranking course conversion needs, including the following:

- **Readiness**. The ultimate concern is that the courseware make a tangible contribution to force readiness. As discussed in the *Total Army DL Plan*, the major indicator of the degree to which readiness is a concern is the number of non-qualified personnel in a given MOS. DL is a proven effective method for MOSQ and other individual skill training.

- **Force structure changes and MOS consolidations**. When unit missions are changed and/or jobs are restructured, it is likely that soldiers will require re-classification training to remain qualified in the new environment. Given that these changes will affect both incoming soldiers and job incumbents, they signify potentially significant training requirements.

- **Doctrinal and technology changes**. The *Total Army DL Plan* suggests that many courses, particularly in the RC, are out of date. Training must also be aligned between various components so that all soldiers in a given MOS are trained to a single standard regardless of their affiliation.

- **Proponent school recommendations.** Because the proponent schools are on the "front lines" of training development, their perceptions of the training should be given full consideration.

- **Return on investment.** Other factors taken into account were training load, MOS density, training development resources, and the availability of existing DL or DL-convertible training materials.

Many of these considerations apply to the process of selecting NG courses for conversion and development. Part of the process should include monitoring of Regular Army activities in the area of DL. Currently, for instance, efforts are underway at Ft. Rucker, Ft. Sill, Ft. Knox, and Ft. Lee to develop DL-based training. To the extent that the results of these efforts apply to the NG, additional conversion efforts in the areas addressed are unnecessary.

Training Requirements

Distance learning that the NG implements can directly improve readiness in the following areas:

- **MOS qualification.** DL can be immediately applied toward the training of low-density MOS having geographic dispersion and long resident training requirements if the courseware is suitably modified and the learning sites are provided with the technology. Later, as the network expands and more courseware is converted, additional MOS related and Officer Advanced Courses can be delivered over this network. Ft. Sill and Ft. Knox have already demonstrated this capability with the larger density artillery and armor MOS.

- **Common skill training:** Common individual skill training and refresher training easily lend themselves to this training medium. One example is the 16 hour Combat Lifesaver's course, converted in 1996.

- **Leadership training and professional education:** Selected portions of the Command and General Staff College, Non-commissioned Officer Education System, and the Sergeant Major's Academy courseware are amenable to DL.

The needs of Regular Army and NG personnel may not be in complete alignment, even for the same MOS, for several reasons. For instance, the equipment and technology available to Active Duty and NG units may not be the same. In addition, the restricted training times for RC personnel along with the necessarily fractured nature of the training may require the application of different course structures and learning strategies. The NG can capitalize on DL conversion by the Regular Army, but must consider its unique role and status.

The NG requires three categories of courseware:

- **NG functional training.** The NG is the proponent for functional courses and training events. The potential for conversion to DL depends on the extent that an instructor must be physically present. In many situations, information can be effectively communicated using DL technologies.

- **TRADOC or schoolhouse training.** NGB-ARO-T is working with TRADOC to determine critical training needs that have an immediate impact on readiness. TRADOC identifies courses and develops Soldier Training Strategies to find out which to convert to DL. The emphasis is on matching the training media to the tasks that are trained. In conversion to NG use, courses are restructured to fit into a maximum of 48 four hour blocks, with no more than 15 days of residential training.

- **External DL courseware.** A multitude of pertinent education and training opportunities are already being delivered via distance learning.

  - *Commercial off-the-shelf training (COTS).* Courses in areas such as Total Quality Management, Environmental Hazards, and Equal Opportunity are available through commercial vendors. A number of universities are now offering degree programs at a distance, some with programs tailored to the specific DL technologies in place in DoD. When these courses meet NG needs, the NG can use them rather than spending resources to develop training on the same subjects.

  - *DoD and federal agency training.* Some training developed by/for civilian federal agencies or other components in DoD can meet NG needs. For instance, training on several tasks required of air traffic controllers has been developed by the Federal Aviation Administration and the United States Air Force. Where possible joint-use arrangements are being pursued.

The first step in determining the training needs in the demonstration region was to obtain data on MOS qualification rates. The training needs analysis focused on MOSQ because DL is especially useful for individual skill training, and MOS training contributes to readiness. The ANGB provided data from the Standard Installation Data for Personnel (SIDPERS) database on the authorization, assignment, and qualification rates for some MOS in the demonstration region as of March, 1996 (these are only part of the total number of MOS in the region; the total data set, such as in the unit status reports, would be classified). Appendix A presents the raw data by state and District of Columbia. The MOS are ordered from those with the greatest training need to those with the least need. These data from SIDPERS should not be the sole basis for decisions regarding DL course development. Current data from the states and DC, including information concerning priorities for DL development, should drive the decisions. In addition, the states and DC should provide information on their needs for other directed training (i.e., training that they require that is not MOS-specific). This plan uses the SIDPERS data because they are available for the entire

region. One state, West Virginia, provided training needs in response to our data requests; the West Virginia data are presented after the SIDPERS data presentation.

Long-Term Courseware Conversion/Development for the NG Nationwide

The *Total Army DL Plan* provides a prioritized list of courses for DL (Appendix B presents a truncated version of the updated list). Several of the criteria that TRADOC used to generate the list make it mutable. It is impossible to anticipate all future force structure, doctrinal, and technological changes. Even assuming a fast-paced and constant rate of conversion to DL, it is likely to take years to bring large numbers of courses on line. Changing circumstances may increase the need for conversion of some courses and decrease the need for others. The same would be true for any list generated specifically for the NG. Thus, the result constitutes a guide, rather than a set-in-concrete strategy for conversion to DL.

In the long term, the ability to implement courses in DL depends on having the resources, both personnel and financial, available for this purpose. To avoid duplication, decisions have to consider the other activities that are occurring in this area (COTS, Active Duty Army, TRADOC, other military, federal government).

Given these contingencies, the approach in this plan for long-term conversion is to provide a method for making decisions rather than a list of courses to convert. As funding becomes available, this strategy will provide a rational and defensible basis for selecting courses. The goal of this strategy is to limit the set to a manageable number of choices prior to seeking input from state training officers and other relevant personnel regarding the priority for conversion. The strategy is described below and is summarized in Figure 1.

1. **Generate list of all possible courses**. This list is essentially the universe of NG courses and other training activities.

2. **Eliminate courses that are already available through DL and those that are in the process of being converted.** This step requires a familiarity with COTS, other Defense, and federal civilian DL activities. A database of off-the-shelf materials has been created and will serve as a useful guide in this regard. Although a sizable task given the explosion of activity in DL, keeping this database up-to-date will be well worth the effort. Appendix C describes the DL courseware database.

The existence of DL training in a given subject area does not ensure its applicability in the NG. Courses that are identified must be examined by NG SMEs to determine the degree of fit between the extant training and their needs. This evaluation must include such factors as learning objectives, instructional strategies, and course format/structure, in addition to content. The outcomes of the analysis may range from total rejection of the courseware, partial use (e.g., CD-ROM, video), or adoption of entire training materials.

3. **Examine available data**. Several databases can provide information on training needs, from both a current and historical perspective. These databases include the unit status

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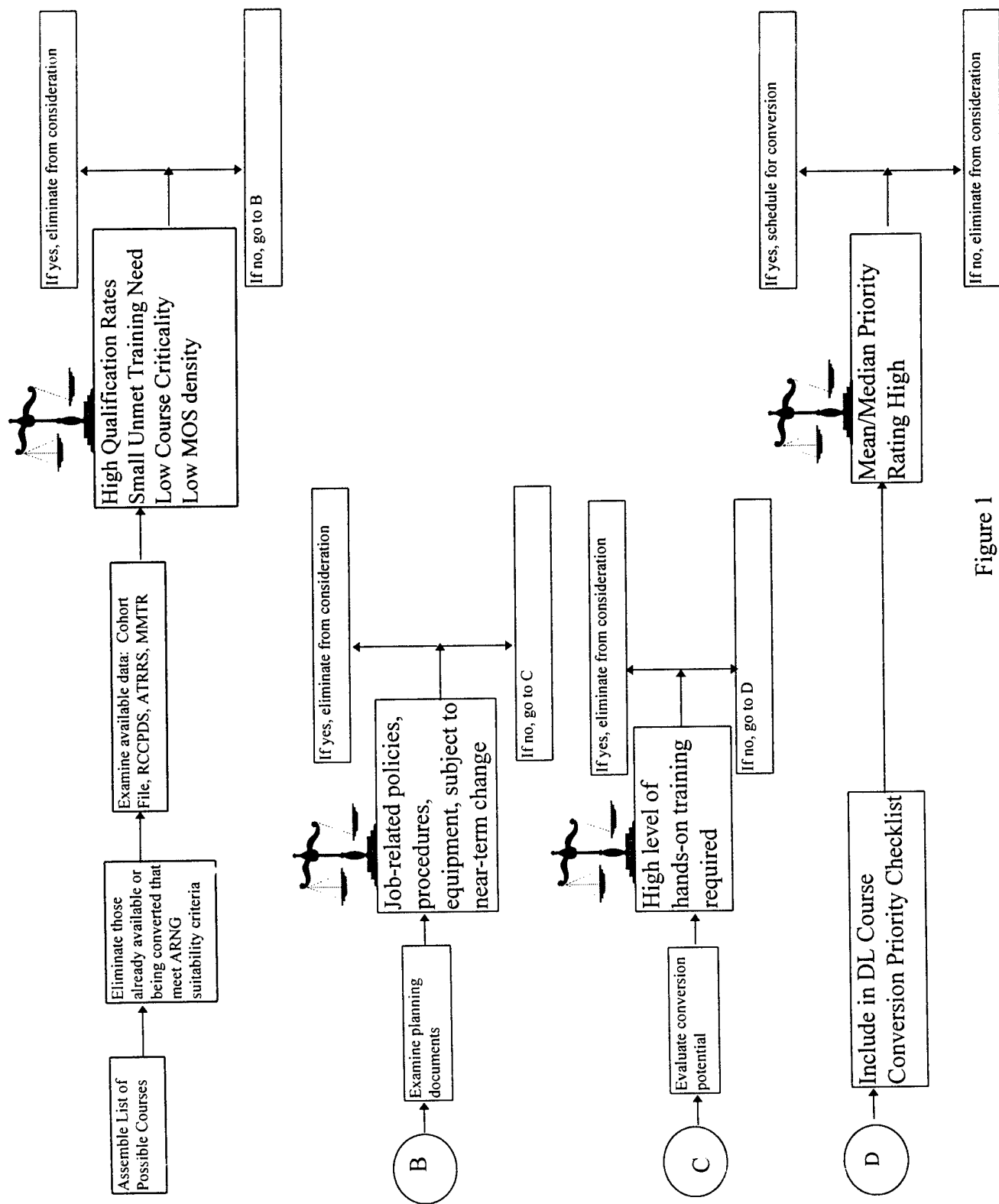
Figure 1

Suggested Framework for DL Conversion Decision Making

reports, Reserve Cohort File and the Reserve Components Common Personnel Data System, either of which will yield information on MOS density in the NG. Others are the Army Training Requirements and Resources System (ATRRS) and the Military Manpower Training Report (MMTR) database. Information gleaned from these sources will provide indications of past and current training loads and capacities, thus highlighting those areas where needs are not being met and where there is a potential for DL technologies to have a positive affect on readiness. Analysis of these data should result in a greatly truncated list of conversion candidates.

The criterion of MOS density is not as clear cut as it may first seem. For one thing, simply because of the number of soldiers, high density MOS have traditionally received more attention than those with fewer members. The training need in a populous specialty may be less because those responsible have recognized the large number of people involved and have planned to ensure that they are trained. High density MOS are likely to have training more immediately available than those with fewer numbers. When large numbers of people need to be trained, efforts are made to bring the training to them rather than making them travel to some resident site. Third is the issue of MOS criticality. A unit may be able to function with less than 100% MOSQ in a high density specialty. In contrast, a single soldier in a critical position for which he/she is not qualified could degrade unit performance. Thus, several other factors need to be considered, including the degree to which the current training need is being met, the requirement for travel and other cost-inducing factors in meeting that need, and the criticality of a less than complete MOSQ rate to the functioning of a given unit.

4. **Examine list of candidates in conjunction with planning documents.** Before courses are considered for conversion, there needs to be some assurance that the content is stable. Therefore, plans to significantly modify procedures, equipment, or other central aspects of a given MOS should be taken into account before conversion. Conversely, changes to a process, procedure, or position suggest that it be converted, given that training revisions are required anyway. Obtaining input from the states regarding their current and planned training priorities will provide valuable insight in this regard.

5. **Evaluate course content for convertibility potential.** With creative instructional techniques it is possible to teach subject matter at a distance even when there is a high degree of hands-on work involved. Computer-based simulations, for instance, provide a means for soldiers to mimic task performance in a two-dimensional environment with a high degree of fidelity. The development of this instruction, however, can be quite costly and time consuming. Certainly, arrangements to have requisite equipment and qualified testers at remote sites is possible for the hands-on portion of training. The general rule of convertibility to DL formats, however, is that the greater the need for hands-on experience to provide adequate training, the less the potential for providing the training at a distance.

Given the large number of courses that remain candidates even at this stage of the selection process, a detailed review of each in this regard will most likely not be possible. However, the knowledge of NG HQ personnel, in combination with input from SMEs in the field, should be sufficient to provide guidelines as to which candidate courses lend themselves more readily to a distance learning environment.

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6. **Obtain state Plans Operations and Training Officer (POTO) input.** At this juncture, the list of candidate courses should be sufficiently manageable that requesting state POTOs to provide rankings of their needs will not impose an undue burden. These individuals are highly involved in planning the training initiatives that currently are taking place in each state across the NG. In many respects, the ranking of candidate courses for conversion to DL will simply be an adjunct task, asking only that they provide feedback as to how these candidates fit in with their short- and long-term training needs. Surveys need not be conducted frequently; perhaps once every year or so depending on the rate of course conversion. One possible format for collecting data is presented in Appendix C. The POTOs may want to integrate DL decisions with their normal training priority decision process.

7. **Select courses for conversion.** After the POTOs have provided the conversion ranking data, a mean and median rank for each candidate course can be calculated. The outcomes of this analysis, in combination with information on resource availability, can then be used to select courses and other training programs for immediate and short-term conversion to DL.

After the selection process, further activities include the development or conversion of courseware, and its implementation. Chapter 6 describes implementation activities.

Courseware Conversion/Development for the Demonstration Region

The section above outlines a full-scale strategy for selecting courses for DL in the NG in the long term. This section presents a shortened version of the strategy. The activities described below were conducted concurrently with the design of the strategy for the long term. This section presents data concerning courseware needs in the demonstration region and notes those courses that the courseware inventory indicates are available for use. This section pertains only to the states in the demonstration region (including the District of Columbia).

Tables 1 through 3 summarize the SIDPERS MOSQ data (cited above and presented in Appendix A) combined over the states in the demonstration region. The number of states reporting data for a given MOS (the first data column) provides a gross indication of the dispersion of the training requirement and thus the potential applicability of distance learning as a solution to the MOSQ problem. Ignoring training content for the moment, the lower the ratio between those qualified and the number of positions authorized and the larger the number of states with a need for personnel in a given MOS, the more likely it is that the regional network can be fruitfully tapped as a training source.[12]

As seen in Table 1, the lowest qualified-to-authorized rate among enlisted personnel across regions (2 states) was in MOS 19K, Armor Crewman. This MOS also ranks fourth in

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[12] Note that two figures are presented in these tables; the ratio of the number qualified to the number assigned, and the number qualified to the number authorized. These two figures can be seen as indicators of the short- and long-term training needs, respectively. A large number/percent of assigned personnel who have yet to qualify in their MOS suggests an immediate need for training, while the gap between positions authorized and the number/percent of soldiers currently qualified provides an indication of the longer range need.

Table 1. Authorized Strength, Assignments, and Percent Qualified Within the Demonstration Region--Enlisted*

MOS	States w/ authorizations	# Authorized	# Assigned	# Qualified	% Assigned Qualified	% Authorized Qualified
19K Armor Crewman	PA WV	1,774	955	778	81.5	43.9
92Y Unit Supply Spec	DC VA WV	411	373	194	52.0	47.2
95B Military Police	DC MD WV	1,087	843	519	61.6	47.7
77F Petroleum Supply Spec	DC	42	24	21	87.5	50.0
31U Signal Support System Specialist	DC MD VA	471	358	247	69.0	52.4
88M Motor Transport Operator	DC PA VA WV	1,398	1,043	743	71.2	53.1
13B Cannon Crewmember	MD PA VA WV	2,192	1,669	1,215	72.8	55.4
11B Infantry	MD PA VA	5,734	4,029	3,268	81.1	57.0
11C Indirect Fire Infantry	MD	176	114	101	88.6	57.4
71L Administrative Specialist	DC	61	67	39	58.2	63.9
92A Automated Logistics Spec	DC MD PA	1,037	898	669	74.5	64.5
94B Food Service	DC MD	285	219	187	85.4	65.6
12B Combat Engineer	MD PA VA WV	1,809	1,654	1,229	74.3	67.9
67N UH-1 Helicopter Repair	WV	72	60	49	81.7	68.1
91B Medical NCO	DC MD PA VA WV	1,379	1,259	969	77.0	70.3
16S Man Portable Air Defense	VA	259	227	182	80.2	70.3
92G	PA VA WV	1,069	947	797	84.2	74.6
63B Light Wheel Vehicle Mechanic	DC MD PA VA WV	1,249	1,153	935	81.1	74.9
11H Heavy Antiarmor Infantry	PA	460	447	367	82.1	79.8

* Covers states in the demonstration region only. The states are Maryland (MD), Pennsylvania (PA), Virginia (VA), West Virginia (WV), and the District of Columbia (DC).

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the number of authorized slots, with a relatively high qualification rate among assigned personnel (81%). The next two occupations (92Y Unit Supply Specialist and 95B Military Police) both have personnel in three of the states in the demonstration region with less than half of the authorized personnel qualified for these positions. In each case, the qualification rate among assigned personnel is also low, at 52% and 62%, respectively. Three of the largest MOS (88M Motor Transport Operator, 13B Cannon Crewmember, and 11B Infantry) fall in the middle in terms of qualification rates, between 53% and 57%. However, among those currently assigned to these positions, around three-quarters are qualified for them. These may be prime long-term candidates for conversion to DI . particularly since they are central to the NG mission.

Overall, the greatest short term needs appear to be among Unit Supply (92Y) and Administrative Specialists (71L), with 52% and 58% of assigned personnel currently qualified. The first of these should perhaps receive priority, with its higher concentration of soldiers and the wider dispersion (three states versus one). These conclusions must, of course, be verified with training personnel to determine if the needs are currently being addressed through other means.

Tables 2 and 3 present analyses for Officers and Warrant Officers in the demonstration region. A quick review of these figures reveals two facts: (a) as would be expected, the concentrations of personnel across MOS are much lower, and (b) the qualification rates among assigned personnel are generally higher. The prime short-term candidates for DL conversion would appear to be 90A (Logistics for Officers) and 920 (Property Accounting for Warrant Officers). This conclusion is based on the fact that they are both represented in more than one state and their assigned qualification rates are among the lowest of all the MOS.

Longer term candidates for DL conversion among Officer and Warrant Officer occupations include 12B Armor and 915 Maintenance, respectively. Although both of these MOS have relatively high qualification rates among those currently assigned, the rates for authorized personnel are around 50%. Neither specialty is among the most populous as indicated by the number of allotted slots, but they are still large compared to the others listed.

Input received from NG HQ personnel suggests that none of the courses listed covers material that is subject to major change in the near term. Regarding the level of hands-on training required, it would appear that the Warrant Officer pilot training would be a less viable candidate for conversion to DL at this time based on this criterion. Although there are many topics in these courses that could be covered at a distance, the ability to significantly increase the MOSQ rate among pilots through DL appears to be hampered by the need for significant amounts of hands-on training along with simulator and actual flight experience.

The final step in this process is to solicit the priorities of the POTOs from the demonstration region in regard to the major candidates for conversion (as well as others not included in this listing). This information will allow a final determination as to the courses that should receive highest priority in terms of making them available to soldiers in the demonstration region. West Virginia provided data on the state's priorities for DL (summarized in Table 4).

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Table 2. Authorized Strength, Assignments, and Percent Qualified Within the Demonstration Region--Officers*

MOS	States w/ authorizations	# Authorized	# Assigned	# Qualified	% Assigned Qualified	% Authorized Qualified
18A Special Forces	WV	23	23	9	39.1	39.1
66E Nurse Practitioner	DC	9	5	4	80.0	44.4
15B Aviation	DC MD PA	136	103	70	68.0	51.5
90A Logistics	MD VA	56	54	29	53.7	51.8
12B Armor	PA WV	198	124	105	84.7	53.0
66H Medical Surgical Nurse	DC MD	61	37	36	97.3	59.0
35D ????	MD PA WV	96	81	63	77.8	65.6
01A Branch Immaterial	DC MD PA VA WV	248	227	163	71.8	65.7
31A Military Police	DC MD WV	88	80	58	72.5	65.9
67J Aeronautical Evacuation	DC	6	5	4	80.0	66.7
00B General Officer	DC	3	2	2	100.0	66.7
13E Cannon Field Artillery	MD PA VA WV	294	242	219	90.5	74.5
11A Infantry	MD PA VA	515	473	394	83.3	76.5
14B SHORAD	PA VA	62	59	52	88.1	83.9
56A Chaplain	DC VA WV	27	24	23	95.8	85.2
21B Combat Engineer	MD PA VA WV	214	221	190	86.0	88.8
55A Judge Advocate	DC VA	30	27	27	100.0	90.0
25C Communications Electronics Ops	MD PA WV	91	98	82	83.7	90.1
88D Motor/Rail Transport	WV	4	5	4	80.0	100.0

* Covers states in the demonstration region only. The states are Maryland (MD), Pennsylvania (PA), Virginia (VA), West Virginia (WV), and the District of Columbia (DC).

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Table 3. Authorized Strength, Assignments, and Percent Qualified Within the Demonstration Region--Warrant Officers*

MOS	# of States w/ authorizations	# Authorized	# Assigned	# Qualified	% Assigned Qualified	% Authorized Qualified
131 Target Acquisition Radar	VA	7	2	2	100.0	28.6
180 Special Forces	MD WV	29	11	11	100.0	37.9
920 Property Accounting	MD PA VA WV	88	58	34	58.6	38.6
311 Criminal Investigator	DC	5	2	2	100.0	40.0
155 Pilot	DC MD	24	17	10	58.8	41.7
915 Maintenance	DC MD PA VA WV	99	56	47	83.9	47.5
919 Equipment Repairer	DC VA WV	12	9	6	66.7	50.0
420 Military Personnel Spec	DC MD PA VA WV	107	79	55	69.6	51.4
151 Aviation Maintenance	DC MD PA VA WV	34	22	18	81.8	52.9
922 Food Service	DC PA	11	6	6	100.0	54.5
154 Pilot	PA	29	24	17	70.8	58.6
153 Pilot	DC MD PA VA WV	335	261	210	80.5	62.7
152 Pilot	MD PA VA WV	150	109	99	90.8	66.0
251 Electronics	DC MD VA	22	19	19	100.0	83.4
210 Utilities Technician	WV	1	1	1	100.0	100.0
250 Tele-communications	VA	2	2	2	100.0	100.0
01A Unqualified	0	0	1	1	100.0	---
41A ??	0	0	1	1	100.0	---
65D ???	0	0	6	6	100.0	---

*   Covers states in the demonstration region only. The states are Maryland (MD), Pennsylvania (PA), Virginia (VA), West Virginia (WV), and the District of Columbia (DC).

Focusing on the MOS Qualification Courses (first column of Table 4), there are both discrepancies and congruencies between the SIDPERS data and the input from the WV NG. On the positive side, the analysis above pointed to Unit Supply Specialist (92Y) and Administrative Specialist (71L) as the MOS with the greatest short-term need for DL implementation, and both of these courses were included on the WV list of suggestions. Further, SIDPERS data indicated that 92Y has both the greatest short- and long-term need in West Virginia, with a MOSQ rate of only 51% among those assigned and those authorized. Two of the MOS cited by the WV NG did not appear in the SIDPERS data at all (96B and 75B), and four were included but did not show an authorization of personnel for West Virginia (71L, 92A, 77F, and 31U). Curtailment of the SIDPERS data to avoid security classification probably produced these seeming anomalies.

To a large degree, the input from the WV NG supports at least the choices for short-term conversion cited earlier; those courses are 71L Administrative Specialist and 92Y Unit Supply Specialist. This conclusion should be confirmed with POTOs from other states in the demonstration region before final decisions are made regarding the conversion or development of MOS-related training.

Several of the courses that the WV NG need are listed in the DL course inventory as already available. Courses in the inventory that appear to match the WV NG needs are marked with asterisks in Table 4. The existing DL courses are in the areas of additional duty training or special qualification and professional education (e.g., HAZMAT and NCO courses). The DL courseware inventory did not show any matches for MOSQ training for the WV NG training needs.

Table 4. Training Needs Cited by West Virginia Plans, Operations, and Training Officers

MOS Qualifications	Additional Duty Training or Special Qualifications	Professional Education Courses	Professional Education Center Courses
96B Intelligence Specialist	NBC Defense Officer/NCO	Basic NCO Course*	Subsistence Supply Technician Course
71L Clerk	Movement Control Officer	Advanced NCO Course*	Petroleum Management Course
75B Personnel Specialist	Defensive Driving Course	Read-Ahead portion of PLDC	ASSC
92A Automated Logistics Specialist	HAZMAT Training Course*		OSHA Compliance for 1st level supervisors
92Y Supply Specialist	**Equal Opportunity Training**		**BN Supply NCO**
95B Military Police	Training Management*		Personnel Sergeant
			Retirement Counselor
77F Petroleum Specialist			Unit Clerk
31U Communications Specialist			Unit Supply NCO

Italics highlights courses included in SIDPERS data for the demonstration region, although West Virginia needs were not mentioned.
Bold Italics signifies courses that were included in the SIDPERS data, which also listed West Virginia as one of the states with personnel in these MOS.
 * Courses in the inventory of existing DL courseware.

Chapter 4
DISTANCE LEARNING SITES AND INSTRUCTIONAL FEATURES

"...A carpenter has a bag of tools, but he does not think in terms of hammers, pliers, saws, etc., etc., but in the functions of these tools. ...If you were to ask him which is his decisive tool, he would think you were mad, for each is superior to the other when properly used."

Colonel J.C. Fuller, British Army
Tactics and Mechanization, Infantry Journal, May 1927

This chapter provides an overview of the short- and long-term picture regarding the placement of DL sites and the capabilities they will provide to NG personnel responsible for the delivery of training in support of force readiness. The locations of DL sites depend on the training needs of the states in the demonstration region, including the District of Columbia, and on existing sites, such as those of the Air NG Warrior Network. The first two sections describe the placement of DL sites, and the remaining sections in this chapter describe the capabilities of DL sites and instructional features of DL systems. The material on instructional features covers advantages and disadvantages of the features, plus some guidance for instructor preparation. The final section describes an initiative that is developing instructional tools that can enhance DL for the NG. A variety of factors may impinge on implementation plans, and technological advances could alter the current state of DL. Thus, the plans discussed below provide an "as of this time" view of the demonstration and nationwide network, a view that is subject to change in response to shifting circumstances, priorities, and technologies.

Locations of Distance Learning Sites

Distance learning sites in the demonstration region. Input was sought from each of the states in the demonstration region regarding their priorities for locating DL sites. Three states (Pennsylvania, Virginia, and West Virginia) provided input (Appendix E). Figure 2 summarizes the site locations that the states need, and shows the location that are having DL facilities installed as described in Chapter 6. Table 5 presents the approximate distance from each site to its nearest neighbor.

Table 5 shows several important points. First, there are situations where the location of two DL sites within relatively close proximity is unavoidable. An example is the District of Columbia, which has the status of a state Guard and therefore requires a DL installation. The small physical dimensions of the District of Columbia increase the likelihood that there are facilities in adjoining states that are relatively close by (e.g., Arlington, VA and Laurel MD).
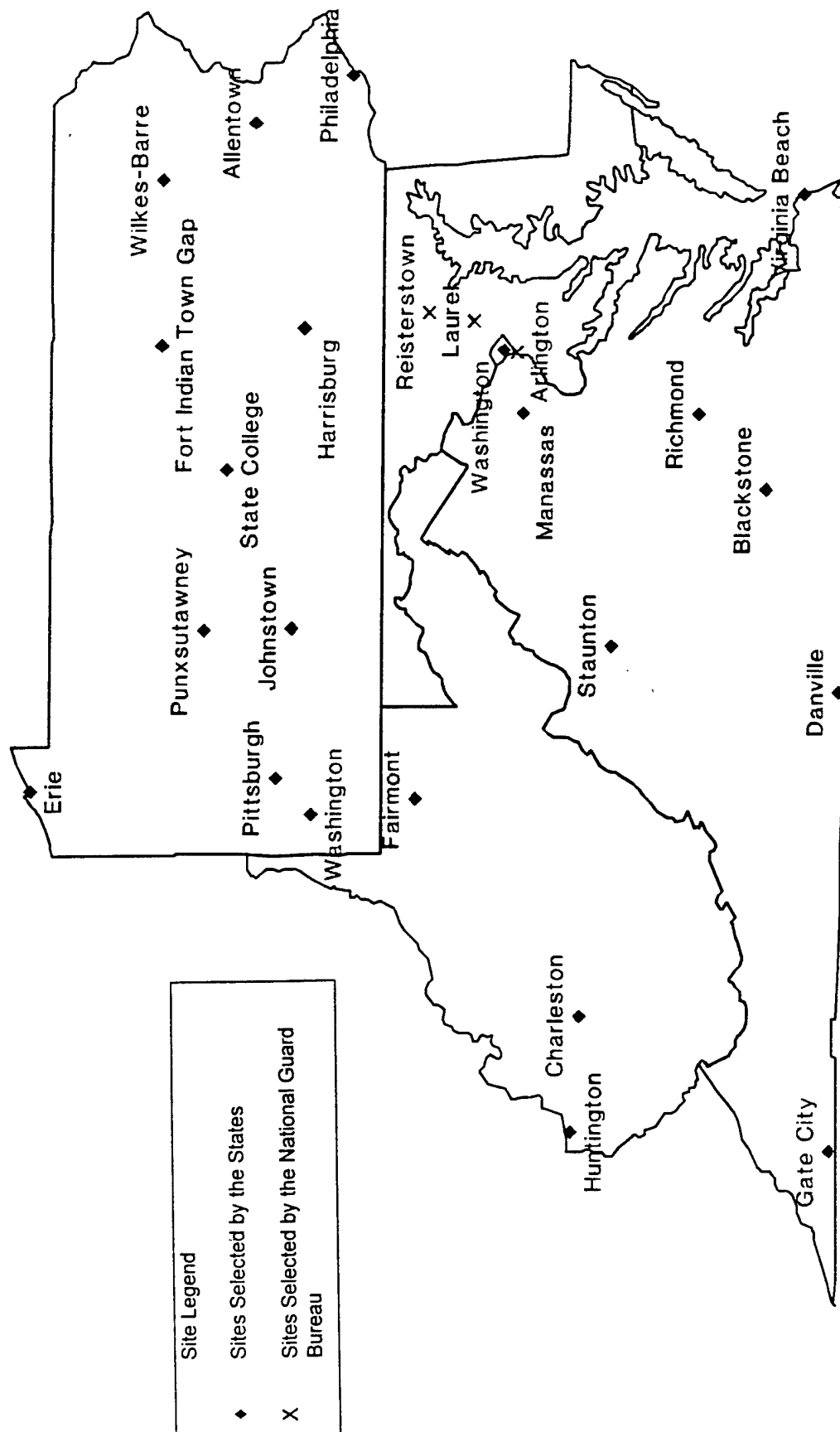
Figure 2. Distance Learning Classroom Sites

Site Legend

♦   Sites Selected by the States

X   Sites Selected by the National Guard Bureau

Erie

Punxsutawney   Wilkes-Barre

Pittsburgh   Johnstown   Fort Indian Town Gap   Allentown

Washington   State College   Harrisburg   Philadelphia

Fairmont

Reisterstown

Laurel

Washington   Arlington

Manassas

Richmond

Virginia Beach

Charleston

Staunton

Blackstone

Huntington

Danville

Gate City

Table 5. Nearest Locations of Adjacent Demonstration Region DL Sites

Current Demonstration Region DL Sites *	Nearest Neighboring Site	Approximate Distance
District of Columbia	Arlington, VA	8 miles
Laurel, MD	Washington, DC	17 miles
Reisterstown, MD	Laurel, MD	25 miles
Allentown, PA	Philadelphia, PA	54 miles
Erie, PA	Punxsutawney, PA	120 miles
Fort Indian Town Gap, PA	Harrisburg, PA	31 miles
Harrisburg, PA	Fort Indiantown Gap, PA	31 miles
Johnstown, PA	Punxsutawney, PA	58 miles
Philadelphia, PA	Allentown, PA	54 miles
Pittsburgh, PA	Washington, PA	27 miles
Punxsutawney, PA	Johnstown, PA	58 miles
State College, PA	Harrisburg, PA	88 miles
Washington, PA	Pittsburgh, PA	27 miles
Wilkes-Barre, PA	Allentown, PA	69 miles
Arlington, VA	Washington, DC	8 miles
Blackstone, VA	Richmond, VA	56 miles
Danville, VA	Blackstone, VA	109 miles
Gate City, VA	Huntington, WV	117 miles
Manassas, VA	Arlington, VA	30 miles
Richmond, VA	Blackstone, VA	56 miles
Staunton, VA	Blackstone, VA	109 miles
Virginia Beach, VA	Richmond, VA	103 miles
Charleston, WV	Huntington, WV	50 miles
Fairmont, WV	Washington, PA	60 miles
Huntington, WV	Charleston, WV	50 miles

*   This column lists all current sites in the demonstration region. In some
cases, matching with the nearest site produces duplicate pairs.

In several cases the next closest DL facility is actually in an adjoining state (e.g., Fairmont, WV and Gate City, VA). This situation highlights the need to consider the plans of neighboring jurisdictions in determining sites for DL expansion in the future. What appears to be the ideal location for a new facility, when only one state is taken into consideration, is actually providing "over" coverage given the presence of an existing site across the border in another state. As input is received from the remaining states in the demonstration region regarding their "wish list" of DL sites, the information in Table 5 can be updated to provide some indication of the degree to which overlap is a problem.

Locations of sites nationwide. The Basis of Issue Plan (BOIP) calls for a DL Student Classroom to be within 60 minutes commuting distance of each soldier's home station. Phase I will install these classrooms within 90 minutes commuting distance for all soldiers. The placement will take into account the locations of existing Air National Guard Warrior Network sites. Currently this includes three uplink sites and 93 downlinks, with a goal of 240 reception sites by network completion. The locations of the Warrior Network sites in the demonstration region are shown in Table 6. A complete listing of network sites is provided in Appendix F.

Table 6. Air NG Warrior Network Sites in Demonstration Region*

State	Site	Status
DC	State HQ	Installation Complete
MD	Andrews AFB	Installation Complete (uplink site)
MD	Baltimore State HQ	On Hold
MD	Martin State Airport	Installation Complete
PA	Willow Grove	Installation Complete
PA	State College ANGS	Installation Complete
PA	Indiantown Gap	Installation Complete
PA	Middletown/Harrisburg	Installation Complete
PA	Pittsburgh	Installation Complete
VA	Richmond State HQ	Installation Complete
VA	Sandston/Richmond	Installation Complete
VA	Camp Pendleton	Installation Complete
WV	Martinsburg	Installation Complete
WV	Charleston State HQ	Installation Complete

* Edward A. Kronholm, personal communication, August 14, 1996.

As installation of the NG network proceeds nationwide, site selection will be guided by training needs and the availability of other DL sites in the surrounding area of the candidates. Those locations that are most remote and therefore require the greatest amount of travel to reach a DL site will be given top priority.

Capabilities of Distance Learning Sites

Distance learning sites have four levels of capacity. They are student classroom remote sites, computer-assisted classrooms, training center source sites, and instructor source sites, as described below.

Student classroom remote sites are locations where NG soldiers will go to receive training. They will provide facilities for computer-based training, the viewing of video-based materials, and participation in live, interactive DL events. Table 7 outlines the capabilities of the student classroom.

Table 7. Air NG Distance Learning Student Classroom - Remote Site (Subset of TRADOC's Classroom XXI)

Feature	Capability
Audio Teleconferencing Station	Allows students to hear and speak to the instructor site during audio teletraining. During interactive television training allows students to talk to the instructor site. Similar to a "super" speaker phone.
Multi-Media Personal Computer	Allows students at the remote site to use computer based training packages, access on-line information services, communicate with the instructor via e-mail and complete paper based assignments using a suite of software applications.
Interactive Graphic Tablet and Software	The electronic tablet and software must be capable of creating, transmitting and receiving graphics and still video images between multiple locations. Must be capable of point to point, and with the use of a data bridge, multi-point sessions.
Analog/Compressed Digital Video Satellite Downlink Dish	Allows the remote site to receive full-motion video, still graphics, computer images, and audio broadcast from the instructor's site. Also downlinks other training events from academic or corporate sources. Can receive multiple training events at the same time.
VHS ½" Player/Recorder	Allows students to play training videotapes. Also allows video based training events to be recorded for further use.
35" TV Monitor	Converts video signal from multi-media PC to signal that can be displayed on TV monitor

Computer-assisted classrooms will be co-located at selected student classroom remote sites. They will consist of twelve networked multi-media personal computers. The equipment will be configured to conduct networked and stand-alone interactive computer-based training.

Training Center Source Sites will have the capacity to conduct multiple distance learning events on a daily basis. The NG Professional Education Center (NGB-PEC) will be one of the first NG sites of this type. TRADOC schools, such as the Sergeant's Major Academy and the Command and General Staff College, are additional examples of training center source sites. Table 8 lists the capabilities of this type of site.

Table 8. NG Distance Learning Training Center - Source Site

Feature	Capability
Audio Bridge	Provides the capability to have a virtual audio classroom. Allows the audio portion of all student classrooms to be bridged together so all students can interact with the instructor and other sites.
Automated Instructor Presentation System	Instructor presentation system that provides the instructor a touch screen selection capability to switch between video and audio sources to include ½" VHS, compact disk audio, cassette tape, personal computer input and instructor video camera with 4 preset positions.
Full Motion Compressed Digital Video Satellite Uplink System	This system allows the instructor to transmit live video, still graphics, and data to an unlimited number of students. It provides an organic interactive television capability to the ARNG.

Instructor Source Sites will be the origination points for weekly or occasional DL training events. They will connect to a Training Center Source Site using the most cost-effective video teleconferencing means available. The Training Center will then relay the instruction to the required Student Classrooms in real-time mode. This linkage will provide a cost-effective means of increasing the number of origination sites while maximizing the resource sharing of a Training Center Source Site. It will also increase flexibility in finding the most knowledgeable subject matter experts and instructors in each field.

Instructional Features of Distance Learning Systems

Teaching and learning at a distance present challenges that are not present in the traditional classroom. As DL technology has developed, a chief focus has been on increasing the ability of instructors and students to communicate in an open manner, much as they would were they in the same room. The features of the NG network outlined above provide multiple means for teacher-student interaction, along with other instructional technologies that can be used to enhance and reinforce the learning experience. A major challenge is to use these features in an effective and cost-efficient manner to achieve course objectives. A brief description of the possible activities and their advantages and disadvantages follows.

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Video teletraining allows the instructor to be seen and heard as he/she delivers training. In this sense, it mimics the traditional classroom setting. However several deviations from that format must be kept in mind for effective training, such as:

- The camera has a restricted view of the area in which the instructor is operating. The instructor must be cognizant of the position of the camera and be sure that any activities carried out are done in a way that can be clearly seen by those viewing it. Rehearsal of the session is essential in determining when camera position changes are necessary and if lesson elements need to be presented by some other means because they have actions that are too large or small to be accommodated by this method.

- The limitations of the camera also make the traditional use of overheads and blackboard difficult. This problem can be solved through the interactive graphics tablet described below.

- In a traditional classroom, the body language and facial expressions of students provide many clues regarding how they are accepting the training. Similarly, DL instructors may have students in the room with them, along with those at remote sites. This is often not the case, and even when it is there are no guarantees that the reactions of those in the field are the same as those in the room. It is essential that the instructor include means of assessing the level of attention and understanding of trainees on the other side of the camera by including frequent questions and other devices that assess these dimensions.

  One useful tool in this regard is to address questions to, or solicit comments from specific sites and students. For this to be possible, the instructor must assemble a list of locations and participants to use throughout the training. Calling roll from this list at the start of each session ensures that it is accurate.

  When instructors have lists of participants, they can take advantage of automated response pads. Response pads allow the students to answer questions (multiple choice or true-false responses); the instructor can determine which students are following the instruction correctly. As an alternative, the students can use anonymous buttons to indicate that they are not following the material (e.g., do not understand). Thus, response pads to some extent replace the body language signals that students use in classrooms. Other ways that the instructor can facilitate interactions with students are described in the section on instructor preparation (below).

- An additional factor in planning DL events is cost. Given the need for satellite linkage, "time is money." In planning a course that uses video teletraining, developers and instructors need to prioritize learning objectives and devote video time to those that will benefit most from this medium. They should consider preparatory activities that will allow trainees to come to the video session ready to get the most from it. Even a simple course outline can be

valuable in establishing a frame of mind that will be more conducive to grasping the material presented. Finally, when time is a concern, other media should be considered for less complex or more procedural types of learning objectives.

Interactive graphics tablets provide the instructor with the capabilities traditionally associated with overhead/projectors and blackboards. Images can not only be sent to remote sites, but they can also be manipulated through such techniques as highlighting to support instructional objectives. If anything, this technology provides the instructor with the capability to present sharper, clearer images than is typically the case with in-class technology. Several points need to be kept in mind when planning the use of interactive graphics.

- The size and clarity of the image must allow for its clear transmission to remote sites. The dimensions of the camera frame dictate the necessary size of the image being transmitted. The size of lettering and other features of the graphic must be large enough for easy viewing by trainees, particularly given that those at remote sites are likely to be watching on a monitor that is at some distance from them. A simple rule is to use a frame that is 8" by 6" along with a 36-point or larger font.

- In cases where the complexity of an image cannot be avoided, it may be wise to provide copies of overheads and other visuals to remote sites for distribution prior to the DL event. These materials can be included in student guides or as stand-alone handouts.

- Rehearsing material to be presented via the graphics tablet is strongly recommended, particularly for those who may have limited or no experience with its capabilities. The system will allow for "closed-circuit" projection of images and an immediate assessment of their viability for training.

Multimedia Personal Computers can be used in a variety of ways, some of which require greater planning than others.

- Stand-alone computer-based training can be used to supplement that which is delivered through other media. In this context, supplement can have several meanings, including: (a) delivering the main body of instruction through CBT, while using audio and/or video sessions to respond to questions or reinforce specific points; (b) developing CBT lessons as precursors to a ITV event, with the instruction laying the groundwork for the material to be delivered by satellite; (c) CBT can be used in a remedial fashion for those who are having trouble grasping course materials.

- Depending on the subject matter, CBT can be used as a primary or secondary means of delivering tests, with results downloaded by on-site personnel for

delivery to the appropriate parties. Issues of test security need to be addressed before this option is implemented.

- The computer can provide a method for students to converse with the instructor via E-mail. Research has demonstrated that the effectiveness of this technique lies in part on the speed with which feedback is provided. When long delays occur between the request for information and the response, trainees view this option less favorably. Therefore, if arrangements are made to communicate with off-site students in this manner, it is incumbent on the instructor to check for mail on a regular basis and respond as soon as feasible.

- If relevant course information is available through the internet, trainees can be directed to use this source as a supplement to other materials presented. The costs involved in such activities must be kept in mind, along with the potential that students may choose to "surf" in other waters once on line.

- The multi-media computers will also be outfitted with traditional word processing and database applications. To the extent that these tools are applicable to course objectives, or can be used by trainees in completing assignments, time can be set aside for this activity. An important consideration in this regard is that there be complete and open access. Individuals who have time or travel conflicts that preclude their taking advantage of these capabilities should not be penalized on this basis.

- Cost of development is an important factor in the use of computer-based instruction. The most effective CBT tends to be highly interactive, incorporating large numbers of visuals (e.g., graphics, still or motion video). The production of such materials is labor intensive, requiring individuals with instructional design, graphic arts, and computer programming skills. It is expensive to produce. One potential solution to this problem is the use of existing courseware. The fact that CBT has been around for some time as an accepted instructional medium means that hundreds of hours of material have been produced. A first step when considering the incorporation of CBT into a given lesson is to determine if there are existing materials that will suit the purpose, either as is or with relatively minor modification. If none are available, a determination must be made as to whether CBT is the most cost-effective means of presenting the material and if the resources are available for its creation. A variety of factors must be taken into account in the first regard, including the number of individuals to be trained and the stability of the content being covered. If the development cost per student ratio is too high, alternative instructional methods should be considered. If the content of the course is likely to change significantly, requiring modifications of the training, a medium that is more easily updated may be indicated. In the long run, if the number of students to be trained is large and the content of the course is likely to remain fairly stable, the decision to develop CBT will come down to a matter of the resources available.

Audio Teleconferencing allows students to communicate with the instructor during interactive television sessions, audio-only presentations, and audio-graphics lessons. The major advantage to audio-only presentations is that they are cheaper than video-based lessons that involve satellite fees. When the subject matter has little visual content, audio teleconferencing may be a viable option. Another potential use of this medium is review/question-and-answer sessions that follow videoteleconferences, computer-based lessons, or self-study sessions. Given that the trainees have seen the material in advance, it may well be possible to reinforce what was learned and clarify misunderstandings or areas of confusion without the need for on-camera demonstrations.

VHS players/recorders can be used to present videotaped lessons on the subject matter in question. There are a plethora of video training materials available, including many that were developed specifically for military audiences. These should be reviewed before use to ensure that they are up-to-date and that the information presented conforms to current/local practices. In the event of minor variations, such tapes may often still be of use when they are presented with caveats explaining the differences between the information given and current policies or procedures. Videotaped lessons can be a valuable means of preparing students for a video-teleconferencing sessions. Having an advance demonstration of the concepts or procedures involved leaves trainees with a firmer basis for understanding material presented by the instructor and thus can reduce the amount of on-air time needed.

Self-study materials can be developed for trainees to use prior to attending training at the armory of other DL site, or as an alternate activity for use during the DL event. The level of interaction between the instructor and trainees and between the trainees themselves is an especially important element in the success of a DL event. The larger the number of sites/participants, the more difficult it becomes to ensure that everyone remains actively involved. Therefore, it is generally recommended that there be a limited number of sites and a limited number of participants at each site during a videoteletraining session. In scheduling a DL event, consideration should be given to splitting up larger groups so that the number of individuals in any given videoteletraining session is kept small. While one portion of the entire class is receiving satellite-based instruction, others can be viewing videotapes, taking part in CBT, or using self-study materials. To the extent possible, the sequencing of these events should be structured to provide background information to the trainees prior to VTT so that time and financial resources can be used to maximum effectiveness.

Instructor Preparation

The characteristics of instructional features, desired above, have implications for the ways that the instructor prepares for DL events. This section provides some ideas concerning how the instructor can sue the advantages and overcome some limitations of DL features.

Although many of the characteristics that make an instructor effective translate directly from a traditional to a DL environment, there are differences that should be considered by even experienced trainers as they consider delivering instruction at a distance. Preparation, which is always important for successful teaching, becomes even more critical. Preparation is

particularly needed for those who do not have much experience with this type of training. Some of the key elements are:

- **Obtaining participant lists by site.** These lists need to be in an easily readable format so that they can be readily referenced throughout training. Calling on individuals in various locations to comment, ask questions, or provide personal insight into issues is the simplest means of maintaining attention and interest.

- **Scheduling activities.** When the number of participants per site is large, it may be advisable to alternate learning activities so that video or audio teletraining sessions are kept small. A portion of each group can be scheduled for other learning activities, such as computer-based training or the viewing of videos. Details must be worked out in advance so that the experience is seen by students as well organized and efficient.

- **Assembling and distributing paper-based materials.** If there are to be paper-based materials such as student workbooks, hard copy overheads, or job aids, these must be assembled, copied, and distributed to the various sites allowing sufficient time for delivery.

- **Preparation of visuals.** Overheads and other visuals must be developed and formatted in a way that will allow for them to be clearly presented to students both on- and off-site. If possible, these materials should be previewed as they will be seen by trainees to ensure that they are clear and understandable. This should be done sufficiently in advance that other arrangements can be made if problems arise (e.g., revise visuals, distribute hard copies to sites).

- **Prepare lecture materials.** Even if the course to be delivered is one that an instructor has given in the past, it is advisable to review all lecture notes with the new learning environment in mind. Annotations should be made concerning such aspects as when the graphics tablet will come into play and when various sites will be called on for input. Again, interaction with remote sites is critical, and to the extent that "class participation" has not been an integral element of lectures in the past, every effort should be made to incorporate it. In general, the method of presentation should be reviewed to ensure that it is appropriate for DL, with adjustments made as required.

- **Review classroom activities.** If there are individual, group, or class activities that make up some portion of training time, these should be reviewed to determine their feasibility in a DL environment. For instance, a given session may involve students breaking up into smaller discussion groups to focus on specific topics, the results of which are then presented to the remainder of the class. Such a technique may need some retooling to be successful in this new setting. This may require that the students create visuals summarizing the outcomes of their discussion for presentation on the graphics tablet. The

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instructions for doing so and the logistics involved must be worked out in advance if such activities are to be smoothly incorporated into the session.

- **Prepare for testing.** If testing is required, the means for doing so at a distance must be planned out. For paper-and-pencil tests, this will probably require on-site proctors to distribute the exams, monitor for cheating, and collect the materials once completed. Computer-based tests will probably also require some form of monitoring, with the data downloaded for evaluation and reporting to the necessary parties.

- **Develop proper mind set.** Instructors need to approach the DL with the proper mind set. An instructor who has done well in traditional settings is likely to be equally effective in a DL environment, but the instructor must be aware that the students are "out there," and be prepared to address them directly and take an active role in engaging them in the learning experience. Distance makes this a greater challenge, but one that can be easily met given the right frame of mind.

Instructional Tools Transfer from the Computer-Assisted Education and Training Initiative

The purpose of the Computer-Assisted Education and Training Initiative (CAETI) is to improve student performance and increase teaching effectiveness of instructors by the development and evaluation of advanced computer-based technology. The Advanced Research Projects Agency (ARPA) manages CAETI to support the Department of Defense Dependent Schools (DoDDS).

CAETI enhances educational capabilities in four ways. The first is the expansion and integration of digital educational resources. It facilitates individualized learning through the use of intelligent tutors, mentors, and associates. It supports learning that is learner-centered, collaborative, and interactive regardless of a student's location. Finally, it provides capabilities and software architectures that are affordable and easily maintainable. CAETI does the following to achieve these goals:

- Adapt and advance educational technology (including simulation and synthetic environments, data visualization, intelligent associates and agents, and affordable simulation networks)

- Provide information navigation, customization and integration tools to increase effective use of networked digital resources

- Apply advances in software engineering, languages, and architectures to reduce the costs of technology use and support.

CAETI can enhance the DL system for the NG, by informing the DL RN demonstration concerning state-of-the-art instructional tools, and by providing tools that are appropriate for NG use. Two tools appear to have the most immediate applicability to the demonstration project.[10] The first are networking tools being developed by the University of Texas at Arlington (called Shepherd) and those being done by Mississippi State University in conjunction with the Smithsonian Natural History Museum (called Natural Partners) as well as the Tri-State Educational Networking Initiative (Mississippi, Alabama, Tennessee). The second are tools being developed with an intelligent tutor in the background by ISX Corporation (called Teacher's or Instructor's Associate) and by Teknowledge (a management associate). While the CAETI program has many other tools available, given the most immediate needs of the demonstration, the above are the most immediately applicable.

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[10] Paul R. Chatelier [personal communication], Memorandum for Dr. Mazie Knerr and Dr. Paul Sticha; Subject: Progress Report on Task 7 Instructional Tools Transfer, June 3, 1996.

Chapter 5
SHARED USAGE MANAGEMENT

A central tenet of the NG DL Network is that it will be available for both military and civilian use. Over the years, NG armories have often become integrated elements with the communities in which they exist in part because they make their facilities available to those communities for a variety of purposes. This plan calls for an extension of that philosophy to include DL. Clearly, the top priority in any armory will be military and other soldier-relevant training. However, it is likely that this will leave significant blocks of time in which the DL facilities will not be in use. Making them available to the general public accomplishes several aims, including:

- Fully capitalizing on the investment in hardware
- Providing educational opportunities to the community that otherwise would not be available
- Promoting good military-civilian relations
- Moving the nation closer to adopting a lifelong-learning philosophy that is required to remain competitive in a global economy.

Although an appealing idea, shared use also raises several concerns in terms of actual implementation that must be addressed if it is to be successful. This plan presents a guide for local armory personnel who will be on the front lines in enacting the shared use program. A key assumption behind this plan is that *armory personnel have neither the time nor the resources to act as promoters of DL technology over the long run.* Thus, a central goal of the implementation process will be to bring those members of the community who might be able to effectively use the equipment up to speed on the methods by which this can be accomplished. As outlined below, it is envisioned that NG personnel will have to expend some time and energy as a catalyst to either integrate their sites with existing local DL activities or get the DL ball rolling within the community. Over time, however, this role should recede to one of scheduler and coordinator, with individual citizens identifying ways in which they can make use of the technology and initiating these uses.

Shared Use Implementation

The distance learning strategy implemented by the NG will provide a strong model for community collaboration in its local hometowns, at the state level and on a national basis. Military-related programming will receive first priority, except in the case of federal or state emergencies. When not being used for military purposes, other federal, state, local community, and academic users will have access to the network in each NG armory through the use of partnership agreements. The armories will become true dual use facilities as they also become community learning centers. They will become learning nodes in the National Information Infrastructure. The NG will be a leader in meeting a stated goal of the Executive Branch to deliver "life-long learning" to all Americans. To further this goal, the NG will

foster and promote learning partnerships with other networks and program providers to further enhance programming possibilities, including the following:

- **Military providers.** The NG will work cooperatively in the military coordinating carefully with the USAR, the Active Army, and the other services to promote better interconnectivity and closer interoperability. The NG will seek opportunities for shared programming related to MOS qualification, Leadership Training, and Professional Development among other topics. The NG will actively maintain its seat on the Total Force Distance Learning Action Team (TFDLAT) sponsored by the Office of the Secretary of Defense.

- **Federal providers.** The NG will maintain close association and participation in organizations like the Government Education and Training Network (GETN), the Government Alliance for Training and Education (GATE), and the Federal Government Distance Learning Association (FGDLA). These non-profit organizations have been formed to promote development and application of distance learning to education and training in the Federal Government, as well as promoting the use of existing government resources to promote retraining the workforce in the private/commercial section. The use of shared programming across Federal Government distance learning networks will save immense manpower and resources. As of April 1996, the FGDLA will have access to 14 uplinks with over 1,400 downlinks. The number of uplinks will rise to over 20 by 1998 and the number of federally operated downlinks is expected to rise to over 2,000 by that date. This network will offer high quality, low cost interactive television with virtually limitless distribution capability in CONUS today and overseas in the near future.

- **State networks.** The Iowa NG has a strong program in DL including dual use with the community. They have 60 networked armories, and at least one point of the network in every county. Community users include all accredited school districts, public and private colleges and technical education institutions, all state agencies, all federal agencies, the U.S. Postal Service, public libraries, hospitals and physician clinics.

  A number of states including Florida, Oregon, Wisconsin, Virginia, Georgia, and Texas among others, have followed the example of Iowa in the creation of state and academic networks to promote the use of distance education in their state boundaries. These networks are currently being used for many purposes to include higher education, county extension service programming, and state and local public hearings and conferences.

- **Academic networks.** The National Technological University (NTU), a consortium of 35 universities, has been delivering instruction via satellite since 1984. They currently offer degree programs in over nine disciplines and have over 16,000 students and 3,200 degree candidates. While the NTU stands as a

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model, many other university, community college, and technical school systems are now offering degree and other course offerings via distance education.

The NG will actively seek partnering arrangements with academic networks to further the professional development of soldiers in and network connections that can improve readiness.

- **Corporate and private networks.** An increasing number of corporate institutions (Ford Motor Co, McDonald's, Hewlett-Packard, etc.) have developed leading edge learning networks providing "training-on-demand" and "just-in-time" training solutions. The NG will maintain liaison with corporate networks and private content providers to learn from their experience and to take advantage of available programming. An example of this includes leadership training sponsored by the American Management Association.

As envisioned in this plan, the steps to be taken in bringing about civilian involvement in DL activities at armories can be divided into two Phases: Start-up and Maintenance. The heaviest involvement on the part of NG personnel will be in the start-up phase. Following "institutionalization" of the technology in a community, the plan envisions that civilians themselves will take the primary role in identifying opportunities for their use.

Phase I - Start-Up

Appoint POC. Following installation of DL technology at a site, public relations activities can inform the community of its existence and capabilities. An important element in this process will be the assigning of a Point of Contact (POC) who will handle inquiries about DL technology in general, the specific capabilities of the NG DL network, and how to learn about and capitalize on training and other educational events. The POC could be an armory spokesperson who has received training in this regard, the system administrator, or anyone else who has enough knowledge to handle inquiries.

This position can be handled by more than one if the workload is unmanageable. A high-visibility armory official (e.g., the Commander) could take responsibility for briefings of a more general nature, with the system administrator or some other individual who is more familiar with the technical aspects of the equipment available for more in-depth presentations. The overall goal is to have one or more persons whose responsibility it is to introduce DL and the NG network to the community.

Locate civilian DL POCs in the community. To ensure that DL activities are coordinated in a community and that there is no duplication of effort, persons who are active in DL should be contacted. Individuals at community colleges and four-year colleges/universities are likely candidates, as are major corporations and local/state governments. A few phone calls should be sufficient to identify DL initiatives and how the armory can coordinate with them. The contacts will be valuable in several regards: (a) as a source of information on upcoming DL events that the armory might offer to host; (b) as a reference point for others in the community who are interested in knowing how they can

employ DL; (c) as a source of possible "customers" for the NG network; and (d) as a potential subject matter expert in DL.

To the extent that the community already has DL activities, NG personnel need not duplicate them. Individuals active in DL are likely grateful to have access to the NG network and willing to share resources and perform a public relations function in exchange. Mutual activity with the community in turn lowers the burden on NG personnel.

Inform local media. Press releases to local media are an effective means of publicizing the DL capabilities. Releases should be written at a fairly general level, to acquaint the audience with its capabilities, the plan for shared use, and the POC(s) who can be contacted for further information. Releases can also be used to announce dates when demonstrations will be held (see below). It may be necessary to schedule individual briefings with members of the press based on their schedules for printing stories or airing broadcasts. Supporting documentation should also be made available, including but not limited to: (a) background material on the NG DL network (including the fact that it is Congressionally mandated); (b) summaries of studies done regarding the effectiveness of DL; (c) a summary sheet on the system's capabilities, and; (d) phone/fax information for the POC(s). Ideally, documents a-c will be provided by NG HQ so that there will be total consistency in the information being distributed across sites.

Perform demonstrations for interested parties. Although the concept of DL is not complicated, those who have not participated in it may not understand how the technology works and how they can capitalize on it. Demonstrations will help bridge this gap and inform key members of the community regarding how they can use it. Several possible means can accomplish this step; a combination of the following may be needed:

- **Hold "invitation-only" demonstrations for key leaders in the area.** The identification of invitees to these sessions can be a time-consuming task. However, it is important to think comprehensively about who the interested parties may be. Restricting the scope to only the obvious candidates (e.g., column one, below) may result in less than optimal utilization of the system within the community. The table below represents a starting point in thinking about who may facilitate use of the network.

- **Conduct open demonstrations announced through public channels.** The press releases can also be used to invite the general public to attend demonstrations at pre-appointed times. One or two sessions may be sufficient, perhaps held on a regular basis. Potential participants should be asked to contact the POC to confirm their intention to attend. Confirmation ensures that there is sufficient room for all of those who would like to come and allows sessions to be cancelled if there is insufficient interest.

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Table 9. Potential Community Users of DL

Local Educational Institutions	Professional Organizations	Club/Social Organizations	Individuals
• Schools (K-12) • Junior Colleges • Colleges and Universities • Vocational • Special Interest Groups in Schools	• Chamber of Commerce • Business Associations • Unions • Other Trade Organizations	• Kiwanis • Rotary • Historical Societies • Garden Clubs • Girls/Boys Clubs • Scouts	• SAT preparatory classes • English as a Second Language • Literacy Instruction • Other remedial education

• **"Go-to" seminars/addresses.** Opportunities to contact a large number of potential network users might require making presentations away from the armory. Supporting materials such as those mentioned previously will be particularly important to compensate for the lack of DL hardware. Use slides and other audiovisuals to convey the nature of the DL experience. The presentations can be followed by on-site demonstrations for interested parties.

The demonstrations themselves can also have a variety of formats, including:

• **Observation of on-going training.** For small groups, it may be possible to invite them to observe an on-going training session. The priority in arranging such an event is that the presence of observers not interfere with the training itself. Some ways to avoid interference are by (a) limiting the size of the group, (b) presenting background briefing materials away from the training site, (c) providing a comprehensive discussion of what participants will be seeing during the observation, and (d) limiting questions until the group has departed the training venue. The primary advantage is that a realistic portrayal of the system capabilities are provided, although care must be taken to schedule the observation at a time when actual training is being conducted, as opposed to individual/group work sessions or breaks.

• **Special training events of general interest.** Another effective means of communicating the capabilities and potential uses of DL technology is to hold special training events that draw members of the general public and potential users. Topics such as financial and retirement planning, income tax preparation, and recreational (e.g., boating) safety are but a few for which existing seminars may be delivered at an armory. Advance planning in the form of announcing the event and ensuring sufficient attendance is required for this tactic to be effective. Attendees would have to take on the costs associated with their

getting the program. If the event is successful, the subsequent word-of-mouth is a valuable marketing tool.

- **Training events for specific groups.** Training events arise that may interest specific segments of the community, so it may be of value to contact these groups and ascertain interest in participating. For instance, a seminar providing updates on medical procedures and practices may be of interest to local hospitals or medical/nursing schools. Tax preparers and accountants may have an interest in a program regarding the impact of changes to the tax code. Local government officials may find a FEMA-sponsored program on emergency preparedness of value. Although this method requires a greater investment in time by the POC (i.e., finding the program, contacting potentially interested groups, scheduling), the likely benefit to participants reinforces the value of the technology.

- **NG-sponsored demonstrations.** Another potentially effective means of communicating the potential of DL is for the NG itself to sponsor networked demonstrations. The sessions could be scheduled for a number of sites, with the demonstration originating from an instructor-source site. In essence, this would be a DL-based session on DL. Individuals from all of the sites would be able to ask questions and participate in the program just as students would in a regular training program. Consideration should be given to scheduling sessions periodically as the number of sites on-line increases.

- **"Down-time" demonstrations.** Given the complications associated with each of the above methods, it is likely that demonstrations will have to be conducted during "down time," when the system is not in use. Although not ideal, the fact that participants can see the equipment should be sufficient to bring home the possibilities for how it might be used to benefit them. The demonstrations should be accompanied by as much supporting material and recounting of first-hand experience as possible.

Means for identifying uses of value to soldiers and civilians in the community. It may be desirable to obtain programs or events from the civilian sector as part of the marketing of the NG DL network. However, armory personnel are not being asked to expend substantial levels of effort in this pursuit. Fortunately, there are a variety of paper-based and electronic references that can be used for this purpose. These include:

- A database of NG-relevant courseware has been prepared that provides listings of courses, many of which are relevant to both military and civilian audiences. In addition, it provides sources where more offerings can be located.

- Several addresses on the internet provide up-to-date listings of DL offerings from a range of vendors. For instance, the University of Wisconsin sponsors a Distance Education Clearinghouse that includes information on available courseware. The address is:

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Distance Education Clearinghouse
University of Wisconsin Extension
Attn: Director of Instructional Communications Systems
975 Observatory Drive
Madison, WI 53706
http://www.uwex.edu/disted/home.html

- Appendix G presents a matrix of distance learning course offerings and Masters-level programs from colleges and universities throughout the United States. Given the explosion in the field of DL, this number will undoubtedly grow over time. Users can obtain an updated list via the internet from the American Center for the Study of Distance Education, Pennsylvania State University (DEOS-L@PSUVM.PSU.EDU).

The marketing of the NG DL network is likely to be an on-going activity. It is difficult to specify criteria by which these activities can be judged successful, and thereby terminated. If the system reaches a saturation point, recruitment of more participants should be terminated. But short of this unlikely prospect, it is probable that armory personnel will continue to play a public relations role throughout the life of the system. However, the amount of time devoted to this role should decrease substantially as the number of users and, consequently, the visibility of the technology within the community grows.

Phase II--Maintenance of the Shared Use Program

As the need for public relations activities decreases, the central role of armory personnel in regard to shared-use activities will be that of coordinator and facilitator. This role will have the following responsibilities:

- Handle inquiries from the public regarding DL and the NG network.

- Maintain a current schedule of NG uses of the system.

- Take requests for use of the facility and determine whether the broadcast to be received will be delivered through compatible technology.

- Ensure that someone is on duty at all times when the facility is in use. This individual should have the ability to get the required equipment up and running, establish the necessary down/up-links, troubleshoot in the event of system problems or failure, and close down and secure the facility.

- Maintain financial records of charges incurred, individuals/groups responsible for payment, and payments made.

- Maintain records on NG and citizen use levels. These data should be logged in a pre-approved format, to include type of event (e.g., MOS-related training,

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general military training, civilian training, other), number of attendees, length in hours, and technical difficulties encountered, if any.

- Perform day-to-day maintenance of the facility.

Shared Use Issues and Policy

Several issues may arise that must be addressed for this strategy to succeed. What follows constitutes general guidelines that need to be filtered through local and state NG policies and procedures.

- **Conflicts between NG and local community needs.** The shared-use concept is one that has been endorsed at all levels through which the NG DL network has passed for approval. It has also been understood that the primary reason for implementing the network is to increase the readiness of NG forces. It should be made clear to all potential users, therefore, that soldier training is a priority that cannot be sacrificed under any circumstances. Civilian applications of the network will be restricted to those times when it is not in use by local NG troops.

- **Payment of facilities fees.** To cover administrative costs, a utilization fee will be charged network users. Direction in this regard will come from NG State or National HQ, with the fees adjusted on an as-needed basis. In addition to this charge, the originating source of the event will also require compensation. This process is to be handled by the group that is ordering the program. That is, the local group sponsoring the event will deal directly with the provider. No NG involvement is required or desired.

- **Arrangements for accessing programs/events using incompatible technologies or modalities.** There may be requests to receive broadcasts that employ different technologies (terrestrial-based transmission) and/or modalities (two-way video). Although it is often possible to work around these differences, *such arrangements must be made between the purchaser and originator of the broadcast and may not involve adaptations to equipment at the armory site.* Limitations on NG personnel time require that the system remain fully operational for soldier training at all times and that those responsible for administering the DL facility not be asked to provide special services such as those that might be involved in making arrangements to reconcile differences in technologies.

- **Competing (non-NG) facility requests.** Armory personnel cannot be asked to make judgments regarding the relative importance or merit of competing requests for use of the DL facilities. Thus, there will be strict adherence to a policy of "first come, first served."

Summary of Shared Use

The concept of shared use is key to the long-term implementation of the NG DL network. At the same time, the primary purpose of the network is to increase NG unit readiness. Therefore, all activities devoted to civilian use of DL technologies should be considered subsidiary to its application towards this ultimate goal. As envisioned in this plan, the shared use implementation strategy will take place in two phases. As armory sites are brought on-line, personnel will be more heavily involved in promoting civilian use of the technology among a community that is likely to be largely ignorant of its capabilities or promise. The efforts will involve making the public aware of the existence of the facilities at the armory and promoting their use through demonstrations that will broaden the public's knowledge and increase their willingness and ability to seek out uses for the network on their own. Over time, this role should decrease, with the central focus of NG personnel becoming the maintenance of the facilities and serving as a conduit for their use by civilians throughout the community.

Chapter 6
IMPLEMENTATION SCHEDULE

The implementation schedule for the DL network depends on several factors that may be subject to change over time, including the following:

- **Funding levels.** Although funding has been allocated, unforeseen contingencies will likely affect the way the funds are spent. Similarly, future budgetary outlays will be subject to congressional scrutiny in light of other governmental responsibilities and NG requirements.

- **Rate of courseware conversion/development/identification.** Until the entire network is in place, the hardware and software allocations must compete for funds. A complete DL network that lacks training to be delivered on it has little merit. Therefore, funds must be devoted to developing useful applications that can be brought on line as the hardware is put in place. As more and more sites become operational, proportionately more effort can be devoted to courseware development/conversion, which in turn should result in an increase in usage.

- **Instructor training.** The effective implementation of DL courseware depends on the ability of instructors to capitalize on its strengths. It is a mistake to assume that individuals who have experienced positive outcomes in a traditional classroom setting can simply apply that background in a DL environment and achieve similar results. Therefore, efforts will have to undertaken to train the trainers in the effective application of the tools available to them through the NG DL network.

- **The rate of distance learning activity outside of the NG.** The rate of growth in the use of DL could have an impact on the degree to which it is used in the NG. As outside agencies develop more generic courses that are relevant to NG activities, the available applications and level of use will also increase.

- **The rate of integration of DL activities between the RA and NG, between NG units, and in a given field.** Coordination is essential in ensuring that: (a) there are no overlapping development/conversion efforts between the regular Army and the NG or between states/units in the NG; (b) the accumulated experience of individual armories in establishing DL sites and bringing them up to speed is passed on to other units, and; (c) DL activities are well integrated with other training events that address related learning objectives. To the extent that coordination is established early in the implementation process, it will speed that process immeasurably.

Because of these and other complications, laying out a long-term, highly specific schedule for the implementation of the DL network is unrealistic. Therefore, the remainder of this chapter is devoted to a discussion of the current status of, and courseware available for the network, along with a generic presentation of the activities required at all NG levels for its continued implementation.

Current Status

According to the *Total Army Distance Learning Plan*, the NG network will begin with a nine site demonstration network in the Eastern Region that will be on line no later than the third quarter of FY 1996. From this it is expected to grow to the point that it covers selected CONUS and OCONUS sites no later than the first quarter of FY 1998. The overall Army plans call for installation of most equipment by the year 2000, with modernization efforts continuing thereafter. Beginning in 1998 some 31 courses will be converted in whole or part annually for the next several years.

At the time of the development of this strategic plan, primary efforts are being focused in two areas:

- Installation of DL facilities in the armories that will participate in the demonstration. These include:

    - Laurel MD
    - Reisterstown MD
    - Fort Indiantown Gap PA
    - Johnstown PA
    - Camp Pendleton VA
    - Blackstone VA
    - Fairmont WV
    - Charleston WV
    - Huntington WV

As the installation process at the initial sites gets underway there is a learning curve in determining the most cost-effective configuration and procedures for implementation. Lessons learned in these early stages will be invaluable as the installation process continues and picks up pace.

- Identification of existing DL courseware that will be available for the demonstration and development of new training programs. Among the courses that have already been evaluated or tried out for NG use are:

    - 93C10 (Air Traffic Control)
    - 13E10 (Cannon Fire Detection Specialist)
    - 2CF7 (Aeromedical Evacuation Officer)
    - Airborne Call for Fire
    - Attrition Management

- Risk Management
- Personnel Sergeant
- Unit Clerk
- Ethics Training
- Youth Challenge Staff Training
- Youth Challenge Training

Efforts are also underway to identify other sources of courseware that might be applicable in the NG. For instance, the Chamber of Commerce has a series of eight seminars covering management topics that have been obtained for NG use. One of these, which addresses violence in the workplace, has already been conducted.

Finally, courseware development projects are getting underway. A contract is already converting much of the Combat Lifesaver Course (CLC) to DL. This is a relatively new requirement dictating that there be one soldier at the squad level who has been trained to perform basic first aid procedures. Given the recency of this mandate, the demand for this training is significant. Satisfying this demand through DL will result in major cost and time savings as it will avoid sending large numbers of soldiers to Fort Indiantown Gap, Pennsylvania, where this course is taught in residence. Among the other conversion efforts being examined are additional elements of aviation, such as MOS 93P10 Aviation Operations Specialist.

Required Implementation Activities

Figure 3 shows the cycles of activities for bringing each new site on-site. Similar cycles are required for each new site. Figure 3 also shows suggested timeframes. The length of time required for the various phases/activities will vary somewhat with different sites. Complications will undoubtedly arise in some instances that will cause delays in reaching goals. As experience is gained with this process, pitfalls can be avoided that may positively affect the pace of implementation. As more courseware becomes available, the time spent in seeking relevant training materials will become shorter. Thus the timeline shown in Figure 3 should be taken as suggestive, with more of an emphasis placed on the activities and the sequence to perform them.

1. Site selection will be a joint state, and national responsibility. Resource allocation from a national perspective will determine how many sites are to be fitted for DL in a given time frame. The states, knowing the number of facilities they will be acquiring over time, will have the responsibility of placing these facilities so that they optimize their use by the various units in their borders. The goal of Phase I implementation is to have a DL site in 90 minutes commuting time for all NG soldiers. This criterion will become stricter as the process continues, with the eventual goal being that of having a DL facility no more than 60 minutes commuting time. Thus site decision making should be geared towards accomplishing these goals and will, in some instances, require coordination between states that share borders to minimize overlap in this regard.

Months Following Site Selection

Task	1	2	3	4	5	6	7	8	9	10	11
a. Select Site											
b. Select Facility											
c. Select Contractor(s)											
d. Prepare Facility											
e. Procure Equipment											
f. Install Equipment											
g. Hire/Train Site Personnel											
h. Identify Training Needs											
i. Identify Training Resources											
j. Schedule Training											
k. Conduct Training											
l. Conduct Follow-up											
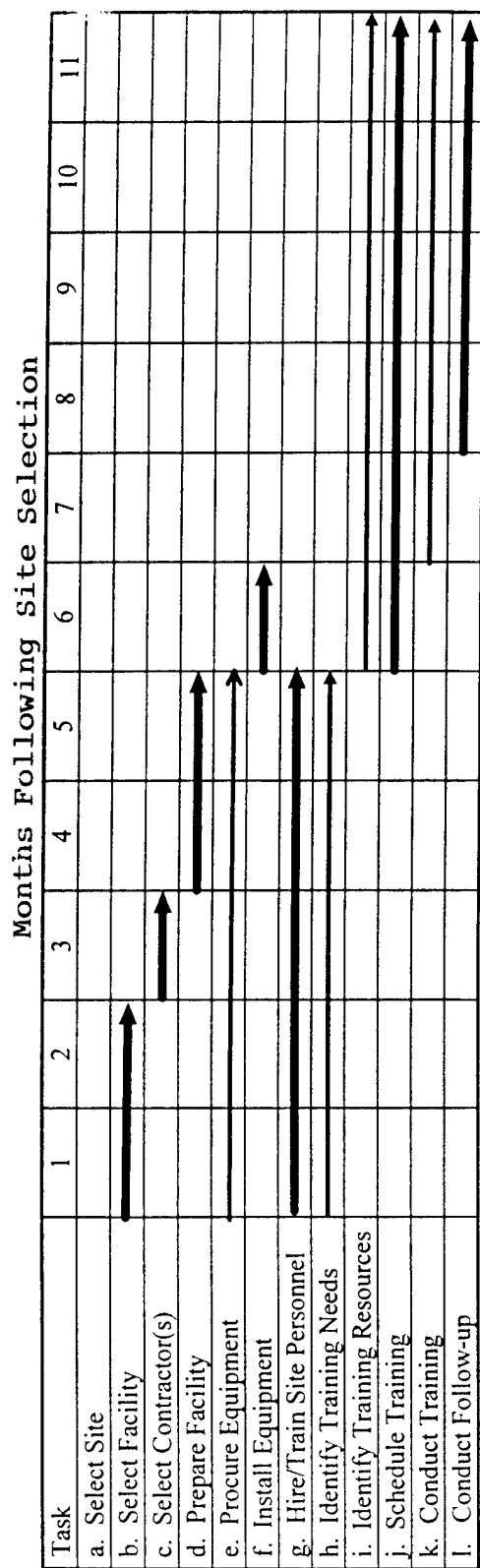
Note: Thick line indicates primary responsibility with local Guard unit, thin line represents shared local/state/national involvement.

Figure 3. Example DL Implementation Schedule

2. Facility selection will be the responsibility of the local unit with guidance provided by state and national personnel. The goal here is to find a space in the armory or associated building that will meet the requirements for a DL facility. These include:

- **Size**. The room or area chosen must be large enough to accommodate 20-30 students comfortably (after installation of the equipment).
- **Wiring**. The location must have sufficient electrical sources to allow for operation of the facility, or the capacity to be retrofitted in this regard.
- **Noise**. It is essential that the area chosen be away from noise and other distractions that are incompatible with a learning environment, or that there be the capacity to filter out distractions.
- **Lighting**. Adjustable lighting is preferred to accommodate the range of DL activities. Again, the ability to retrofit a space to provide proper lighting should also be considered.

Further, sites with computer assisted classrooms will need to provide for this use taking into consideration the same requirements as listed above.

3. To the extent that the space chosen for the DL facility needs physical modification to conform to the requirements, contractors will likely be required to perform the work. Given the geographic dispersion of these efforts, it will be incumbent on the local/state jurisdiction to solicit bids for this purpose and select an individual or firm that appears to be able to meet the specifications at a reasonable cost.

4. It is incumbent on armory personnel to ensure that the space chosen for distance learning activities is prepared in accordance with the specifications prior to the installation of the facility.

5. The requirement for standardization across the network necessitates that the procurement of equipment be handled on a national level. Although the largest expenditures in this regard will occur during initial system implementation, it is likely that there will be a continuing upgrade as new technologies and demands are encountered.

6. Installation of the DL facilities will be handled on a contractual basis with the supplier. Local personnel need to coordinate with these parties during the process to ensure that their specific needs are met.

7. Although the intention in implementing the DL network is to minimize the workload for local armory personnel, it remains the fact that someone will have to take responsibility for scheduling its use, performing basic maintenance, and taking care of those activities associated with training events. This individual can be someone who is currently on staff at the armory or an outsider hired for this purpose. In either case, training will be required and this should be coordinated at the state level.

8. Identification of training needs will take place at the local, state, and national levels. It is not anticipated that local armory personnel will be developing training for

delivery via the network. As mentioned elsewhere in this plan, it is currently envisioned that state training officials will be surveyed on a periodic basis to determine their views on courseware conversion/development priorities. This information will, in turn, most likely be collected from armory personnel.

9. Once training needs that can be met through the DL network have been identified, it is then necessary to determine the most cost-effective means of satisfying these needs. This can mean using existing DL training programs, adapting training developed for another medium, or creating new materials. Courseware development efforts will be coordinated at the national level, with input from local and state officials regarding their specific needs. Local personnel will also be responsible for identifying privately produced training events that may be of interest to their units.

10. Scheduling of training events will be handled at each armory site. This will entail coordinating schedules for the delivery of training events with unit training times. It will also require the synchronization of public and NG uses of the network, with the latter given priority.

11. The primary on-site responsibilities associated with the conducting of training events include ensuring that any ancillary materials required for the training are available (e.g., student guides, computer software), establishing the linkages required for video/audio teletraining, making sure that the proper personnel are assembled for the event, collecting/downloading all test data for delivery to the appropriate repository, and performing system shut down procedures.

12. Follow-up activities associated with training conducted via the DL network are similar to those currently performed after a stand-up or residential training event. These include updating personnel records to reflect training outcomes and following up with personnel who may require remedial training and other assistance.

Distance Learning Network Usage

The rate of growth in usage of the DL network will be a function of the pace at which the equipment itself is installed and the amount of courseware that is available for delivery through the network. Initially, the need for training as indicated by such factors as the percentage of personnel who are not MOSQ and the demand for other, mandated non-occupational training will be relatively high. This fact is part of the rationale for the DL network to begin with. As more and more sites come on line, however, the gap between available training and training need should begin to diminish. This point is graphically represented in Figure 4. This graph makes the obvious point that as the level of use increases, the unmet demand will decrease.
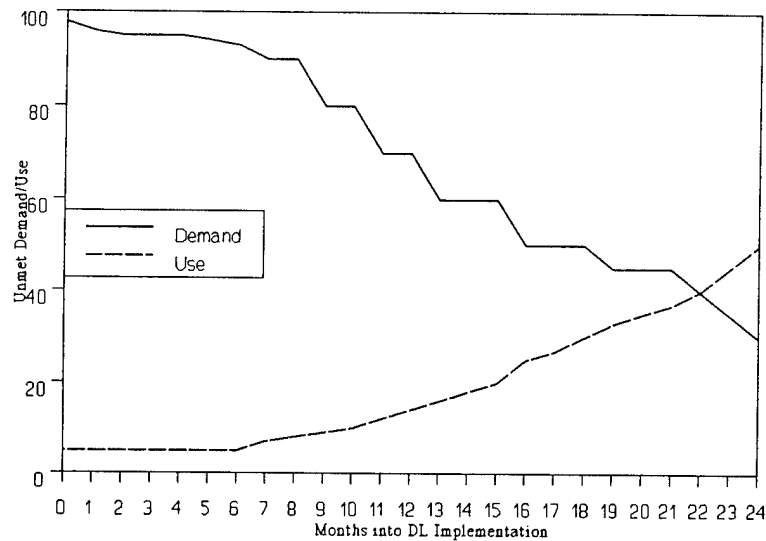
Figure 4. Relative Unmet Demand and Use Over Time

In the early days of implementation it is important to keep in mind that the number of sites that have been brought on line and the amount of courseware available will constitute constraints on the degree of usage. Thus the number of training events and the number of participants in the events will likely not be large at the outset. Any attempts to evaluate usage data in the earlier stages of implementation should be done with these constraints in mind.

APPENDIX A

Courseware Needs by State

Table 1. Non-MOSQ[1] for District of Columbia

Enlisted Personnel

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
95B	674	430	262	168	412
88M	253	98	72	26	181
63B	102	84	68	16	34
92A	101	97	68	29	33
94B	63	68	61	7	2
91B	49	52	42	10	7
71L	61	67	39	28	22
31U	49	36	24	12	25
77F	42	24	21	3	21
92Y	50	40	19	21	31
Totals	1,444	996	676	320	768

Officer

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
31A	51	48	33	15	18
01A	51	47	26	21	25
55A	14	14	14	0	0
66H	23	14	13	1	10
56A	4	6	5	1	-1
15B	13	9	5	4	8
66E	9	5	4	1	5
67J	6	5	4	1	2
00B	3	2	2	0	1
Totals	174	150	106	44	69

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[1] Military Occupational Specialty Qualification

Table 1. Non-MOSQ for District of Columbia (Cont.)

Warrant

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
153	44	21	18	3	26
915	7	4	4	0	3
155	14	8	4	4	10
420	10	7	3	4	7
251	2	2	2	0	0
311	5	2	2	0	3
919	2	2	2	0	0
151	3	1	1	0	2
41A	0	1	1	0	0
922	2	1	1	0	1
Totals	89	49	38	11	52

Table 2. Non-MOSQ for Maryland

Enlisted Personnel

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
11B	1613	959	756	203	857
12B	290	283	195	88	95
91B	288	260	187	73	101
95B	299	296	180	116	119
92A	302	232	165	67	137
63B	201	192	155	37	46
94B	222	151	126	25	96
11C	176	114	101	13	75
13B	153	112	89	23	64
31U	174	142	88	54	86
Totals	3,718	2,741	2,042	699	1,676

Officer

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
11A	133	122	86	36	47
25C	33	37	27	10	6
21B	27	29	26	3	1
13E	32	30	24	6	8
66H	38	23	23	0	15
15B	29	33	22	11	7
35D	35	32	20	12	15
31A	27	25	18	7	9
01A	32	33	18	15	14
90A	31	31	16	15	15
Totals	417	395	280	115	137

Table 2. Non-MOSQ for Maryland (Cont.)

Warrant

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
153	50	49	45	4	5
152	31	20	19	1	12
420	26	25	13	12	13
915	16	15	11	4	5
151	10	8	6	2	4
155	10	9	6	3	4
920	27	16	6	10	21
180	14	5	5	0	9
251	4	4	4	0	0
Totals	188	151	115	36	73

Table 3. Non-MOSQ for Pennsylvania

Enlisted Personnel

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
11B	2132	1872	1511	361	621
13B	1008	801	626	175	382
19K	1536	768	622	146	914
91B	727	680	519	151	208
92G	617	615	501	114	116
12B	714	627	489	138	225
63B	547	544	439	105	108
92A	634	569	436	133	198
88M	561	521	411	110	150
11H	460	447	367	80	93
Totals	8,936	7,444	5,921	1,513	3,015

Officer

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
11A	208	209	192	17	16
13E	141	119	113	6	28
12B	166	94	82	12	84
21B	69	73	60	13	9
25C	51	52	50	2	1
91B	56	58	47	11	9
15B	94	61	43	18	51
35D	56	42	38	4	18
01A	55	48	35	13	20
14B	36	37	33	4	3
Totals	932	793	693	100	239

Table 3. Non-MOSQ for Pennsylvania (Cont.)

Warrant

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
152	106	77	69	8	37
153	129	71	52	19	77
915	48	20	20	0	28
920	37	25	20	5	17
420	31	23	19	4	12
154	29	24	17	7	12
65D	0	6	6	0	0
151	17	8	6	2	11
922	9	5	5	0	4
Totals	406	259	214	45	198

Table 4. Non-MOSQ for Virginia

Enlisted Personnel

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
11B	1989	1198	1001	197	988
12B	458	462	318	144	140
13B	748	480	287	193	461
92G	358	241	213	28	145
63B	303	225	186	39	117
16S	259	227	182	45	77
91B	259	205	170	35	89
31U	248	180	135	45	113
88M	410	266	127	139	283
92Y	260	229	122	107	138
Totals	5,292	3,713	2,741	972	2,551

Officer

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
11A	174	142	116	26	58
21B	69	68	61	7	8
13E	94	65	56	9	38
01A	49	43	35	8	14
14B	26	22	19	3	7
55A	16	13	13	0	3
91B	18	15	13	2	5
90A	25	23	13	10	12
56A	17	12	12	0	5
Totals	488	403	338	65	150

Table 4. Non-MOSQ for Virginia (Cont.)

Warrant

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
153	59	75	67	8	- 8
420	33	17	14	3	19
251	16	13	13	0	3
915	22	12	9	3	13
152	5	8	8	0	- 3
920	13	10	5	5	8
151	2	3	3	0	- 1
131	7	2	2	0	5
250	2	2	2	0	0
919	6	3	2	1	4
Totals	165	145	125	20	52

Table 5. Non-MOSQ for West Virginia

Enlisted Personnel

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
12B	347	282	227	55	120
13B	283	276	213	63	70
19K	238	187	156	31	82
88M	174	158	133	25	41
63B	96	108	87	21	9
92G	94	91	83	8	11
85B	114	117	77	40	37
92Y	101	104	53	51	48
91B	56	62	51	11	5
67N	72	60	49	11	23
Totals	1,575	1,445	1,129	316	446

Officer

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
01A	61	56	49	7	12
21B	49	51	43	8	6
13E	27	28	26	2	1
12B	32	30	23	7	9
18A	23	23	9	14	14
31A	10	7	7	0	3
56A	6	6	6	0	0
35D	5	7	5	2	0
25C	7	9	5	4	2
88D	4	5	4	1	0
Totals	224	222	177	45	47

Table 5. Non-MOSQ for West Virginia (Cont.)

Warrant

MOS	AUTH	ASSIGNED	MOSQ	NON-MOSQ	
				ASSIGNED	AUTH
153	53	45	28	17	25
180	15	6	6	0	9
420	7	7	6	1	1
152	5	4	3	1	2
915	6	5	3	2	3
920	11	7	3	4	8
151	2	2	2	0	0
919	4	4	2	2	2
01A	0	1	1	0	0
210	1	1	1	0	0
Totals	104	82	55	27	50

APPENDIX B

Courses for Conversion to Distance Learning by Priority

The Army Training and Doctrine Command prioritized coures for conversion to distance learning. This appendix contains the first 230 courses as of March 1996 (per Ms. Johnsie Brown, HQTRADOC).

Courses For Conversion To Distance Learning By Priority

Priority	Course MOS and Title		Proponent
1	88M40	MOTOR TRANSPORT OPERATOR ANCOC	Transportation School
2	88M30	MOTOR TRANSPORT OPERATOR BNCOC	Transportation School
3	51B10	CARPENTRY AND MASONRY SPECIALIST	Engineer School
4	73CIO	FINANCE SPECIALIST	Finance School
5	63810	LIGHT WHEEL VEHICLE MECHANIC	Quartermaster School
6	63630	LIGHT WHEEL VEHICLE MECHANIC BNCOC	Ordnance School
7	71LIO	ADMINISTRATIVE SPECIALIST	Adjutant General School
8	92A10	AUTOMATED LOGISTICAL SPECIALIST	Quartermaster School
9	55B30	AMMUNITION SPECIALIST BNCOC	Ordnance, MISSILE and Munitions
10	93C1O	AIR TRAFFIC CONTROL OPERATOR	Aviation School
11	88H10	CARGO SPECIALIST	Transportation School
12	BNCOCCOM	BNCOC COMMON CORE	Sergeants Major Academy
13	ANCOC COM	ANCOC COMMON CORE	Sergeants Major Academy
14	88M10	MOTOR TRANSPORT OPERATOR	Transportation School
15	1-250-C10	COMBINED ARMS a SERVICE STAFF SCHOOL (CAS3)	Command and General Staff College
16	31 U30	SIGNAL SUPPORT SYSTEMS SPECIALIST BNCOC	Signal School
17	31 U40	SIGNAL SUPPORT SYSTEMS SUPERVISOR	Signal School
18	BSC	BATTLE STAFF NCO COURSE	Sergeants Major Academy
19	91B10	MEDICAL SPECIALIST	Academy of Health Sciences
20	91B30	MEDICAL NCO BNCOC	Academy of Health Sciences
21	91B30(TECH)	AMEDD NCO BASIC (NCOES)	Academy of Health Sciences

Priority	Course MOS and Title		Proponent
22	91 B40	MED NCO COMBINED ANCOC	Academy of Health Sciences
23	54B10	CHEMICAL OPERATIONS SPECIALIST	Chemical School
24	63TI 0	M2/3 BRADLEY FIGHTING VEHICLE SYSTEM MECHANIC	Armor School
25	63T30	BRADLEY FIGHTING VEHICLE SYSTEM MECHANIC BNCOC	Armor School
26	63T40	BRADLEY FIGHTING VEHICLE SYSTEM MECHANIC ANCOC	Ordnance School
27	8C-FI7/553-FS	UNIT MOVEMENT OFFICER DEPLOYMENT PLANNING	Transportation School
28	92A30	AUTOMATED LOGISTICAL SPECIALIST BNCOC	Quartermaster School
29	92A40	AUTOMATED LOGISTICAL MANAGEMENT ANCOC	Quartermaster School
30	92YI0	UNIT SUPPLY SPECIALIST	Quartermaster School
31	92Y30	UNIT SUPPLY SPECIALIST BNCOC	Quartermaster School
32	92Y40	UNIT SUPPLY SPECIALIST ANCOC	Quartermaster School
33	ASI FS (7SL10)	POSTAL OPERATIONS	Adjutant General School
34	38AI0	CIVIL AFFAIRS SPECIALIST	JFK Special Warfare School
35	67T10	UH-60 HELICOPTER REPAIRER	Aviation Logistics School
36	67T30	UH-80 HELICOPTER REPAIRER SUPERVISOR BNCOC	Aviation Logistics School
37	88NIO	TRAFFIC MANAGEMENT COORDINATOR	Transportation School
38	88N30	TRANSPORTATION MANAGEMENT COORDINATOR BNCOC	Transportation School
39	88N40	TRAFFIC MANAGEMENT COORDINATOR ANCOC	Transportation School
40	NBC DEF	NBC DEFENSE COURSE	Chemical School
41	67YI0	AH-1 ATTACK HELICOPTER REPAIRER	Aviation Logistics School
42	67Y30	AH-1 ATTACK HELICOPTER REPAIRER SUPERVISOR BNCOC	Aviation Logistics School
43	37FIO	PSYCHOLOGICAL OPERATIONS SPECIALIST	JFK Special Warfare School
44	37F30	PSYOPS SPECIALIST BNCOC	JFK Special Warfare School

Priority	Course MOS and Title		Proponent
45	37F40	PSYCHOLOGICAL OPERATIONS ANCOC	JFK Special Warfare School
46	91 C20	PRACTICAL NURSE	Academy of Health Sciences
47	91C20	PRACTICAL NURSE PHASE I	Academy of Health Science
48	91 C20	PRACTICAL NURSE PHASE 11	Academy of Health Sciences
49	91C20	PRACTICAL NURSE PHASE III	Academy of Health Sciences
50	91C20	PRACTICAL NURSE PHASE IV	Academy of Health Sciences
51	91C20	PRACTICAL NURSE PHASE V	Academy of Health Sciences
52	91C20	PRACTICAL NURSE PHASE VI	Academy of Health Sciences
53	18F40	SPECIAL FORCES ASSISTANT OPERATIONS & INTEL SERGEANT	JFK Special Warfare School
54	95B10	MILITARY POLICE	Military Police School
55	95B30	MILITARY POLICE BNCOC (MP)	Military Police School
56	95B40	MILITARY POLICE ANCOC	Military Police School
57	88H30	CARGO SPECIALIST BNCOC	Transportation School
58	55B10	AMMUNITION SPECIALIST	Ordnance, Missile and Munitions School
59	SGL	SMALL GROUP LEADER COURSE	Training Development and Analysis Directorate, TRA
60	BFITC	BATTLE-FOCUSED INDIVIDUAL TRAINING COURSE	Training Development and Analysis Directorate, TRA
61	7H-Fl3/830-Fl	COMBATING TERRORISM ON MILITARY INSTALLATIONS	Military Police School
62	BEM	29/67 CAREER MANAGEMENT FIELD BASIC ELECT MAINTENANCE	Ordnance School
63	67CMF40	CAREER MANAGEMENT FIELD 67 COMBINED ANCOC	Aviation Logistics School
64	67CMF30	COMMON AVIATION MANAGEMENT (CAM) BNCOC	Aviation Logistics School
65	CET	COMMON ENGINEER TRAINING	Engineer School
66	7-12-C22	ADJUTANT GENERAL OFFICER ADVANCED	Adjutant General School

Priority	Course MOS and Title		Proponent
67	2-44-C22	AIR DEFENSE ARTILLERY OFFICER ADVANCED	Air Defense Artillery School
68	2-17-C22	ARMOR OFFICER ADVANCED	Armor School
69	2-1-.C22	AVIATION OFFICER ADVANCED	Aviation School
70	5-16-C22	CHAPLAIN OFFICER ADVANCED	Chaplain School
71	4-3-C22	CHEMICAL OFFICER ADVANCED	Chemical School
72	8-10-C22 (LO	COMBINED LOGISTICS OFFICER ADVANCED	Army Logistics Management College (ALMC)
73	4-5-C22	ENGINEER OFFICER ADVANCED	Engineer School
74	2-6-C22	FIELD ARTILLERY OFFICER ADVANCED	Field Artillery School
75	7-14-C22	FINANCE OFFICER ADVANCED	Finance School
76	2-7-C22	INFANTRY OFFICER ADVANCED	Infantry School
77	3-3O-C22	MILITARY INTELLIGENCE OFFICER ADVANCED	Intelligence School
78	7-19-C22	MILITARY POLICE OFFICER ADVANCED	Military Police School
79	4-11-C22-25C	SIGNAL OFFICER ADVANCED	Signal School
80	2F-FOA-FI5	ADA OFFICER ADVANCED (PATRIOT FOLLOW-ON)	Air Defense Artillery School
81	2E-FOA-FI42	ADA OFFICER ADVANCED (SHORAD FOLLOW-ON)	Air Defense Artillery School
82	7-l2-C32	ADMINISTRATIVE TECHNICIAN WO ADVANCED	Adjutant General School
83	2-44-C32	AIR DEFENSE ARTILLERY WO ADVANCED	Air Defense Artillery School
84	8-10-032-921	AIRDROP SYSTEMS TECHNICIAN WO ADVANCED	Quartermaster School
85	4-9-C32-914A	ALLIED TRADES TECH WO ADVANCED	Ordnance School
86	4-9-032-910A	AMMUNITION TECHNICIAN WO ADVANCED	Ordnance, Missile and Munitions School
87	4-9-C32-913A	ARMAMENT REPAIR TECH WO ADVANCED	Ordnance School
88	2-1-C32	AVIATION WO ADVANCED	Aviation School
89	7-51-C32	BANDMASTER WO ADVANCED	Adjutant General School
91	4-11-C32-251	DATA PROCESSING TECH WO ADVANCED	Signal School

Priority	Course MOS and Title		Proponent
90	4-1 1-C32-250	COMMUNICATIONS SECURITY TECH WO ADVANCED	Signal School
92	4.11-C32-918	ELEC SYSTEMS MAINT TECH WO ADVANCED	Signal School
93	4-5-C32-919A	ENGINEER EQUIPMENT REPAIR TECH WO ADVANCED	Engineer School
94	8-10-C32-922	FOOD SERVICE TECHNICIAN WO ADVANCED	Quartermaster School
95	4-9-C32-916A	HIMAD DS/GS MAINT TECH WO ADVANCED	Ordnance, Missile and Munitions School
96	4-9-C32-912A	LAND COMBAT MISSILE SYSTEMS TECH WO ADVANCED	Ordnance, Missile and Munitions School
97	8-55-C32-880	MARINE WARRANT OFFICER ADVANCED	Transportation School
98	4-9-C32-917A	MFAD DS/GS MAINTENANCE TECH WO ADVANCED	Ordnance, Missile and Munitions School
99	3-3O-C32	MILITARY INTELLIGENCE WO ADVANCED	Intelligence School
100	8-10-C32-920	PROPERTY ACCOUNTING TECHNICIAN WO ADVANCED	Quartermaster School
101	8-10-032-920	SUPPLY SYSTEMS TECHNICIAN WO ADVANCED	Quartermaster School
102	4-9-C32-915E	SUPPORT/STAFF MAINTENANCE TECH WO ADVANCED	Ordnance School
103	4-11-C32-250	TACTICAL AUTOMATED NETWORK TECH WO ADVANCED	Signal School
104	2-6-C32-131A	TARGET ACQUISITION RADAR TECH WO ADVANCED	Field Artillery School
105	4-5-C32-215D	TERRAIN ANALYSIS TECHNICIAN WO ADVANCED	Engineer School
106	4-9-C32-918A	TMDE MAINTENANCE SUPPORT TECH WO ADVANCED	Ordnance, Missile and Munitions School
107	4-9-C32-915D	UNIT MAINTENANCE TECH (HEAVY) WO ADVANCED	Ordnance School
108	4-5-C32-21 OA	UTILITIES OPNS & MAINTENANCE TECH WO ADVANCED	Engineer School

Priority	Course MOS and Title		Proponent
109	16S10	MAN-PORTABLE AIR DEFENSE SYSTEM CREWMEMBER	Air Defense Artillery School
110	16S30	MAN PORTABLE AIR DEFENSE SYSTEM BNCOC (STINGER)	Air Defense Artillery School
111	16S40	MAN-PORTABLE AIR DEFENSE SYSTEM ANCOC	Air Defense Artillery School
112	57E1O	LAUNDRY AND BATH SPECIALIST	Quartermaster School
113	57E/43M30	LAUNDRY & BATH/FABRIC REPAIR SPECIALIST BNCOC	Quartermaster School
114	57E/43M40	LAUNDRY & BATH/FABRIC REPAIR SPECIALIST ANCOC	Quartermaster School
115	19DI0/20	CAVALRY SCOUT	Armor School
116	I9D30	CAVALRY SCOUT	Armor School
117	19D40	CAVALRY SCOUT ANCOC	Armor School
118	63S10	HEAVY WHEEL VEHICLE MECHANIC	Quartermaster School
119	14RI0	LINE OF SIGHT-FORWARD-HEAVY CREWMEMBER	Air Defense Artillery School
120	14R2/3/40(T)	LINE OF SIGHT-FORWARD-HEAVY CREWMEMBER (T)	Air Defense Artillery School
121	62B10	CONSTRUCTION EQUIPMENT REPAIRER	Engineer School
122	62B30	CONSTRUCTION EQUIP REPAIRER SUPERVISOR BNCOC	Engineer School
123	62B40	CONSTRUCTION EQUIPMENT REPAIRER ANCOC	Ordnance School
124	16TI0	PATRIOT MISSILE CREWMEMBER	Air Defense Artillery School
125	16T40	PATRIOT AIR DEFENSE SYSTEM ANCOO	Air Defense Artillery School
126	77W30	WATER TREATMENT SPECIALIST SNOOC	Quartermaster School
127	77W40	PETROLEUM AND WATER SPECIALIST ANCOC	Quartermaster
128	14S10	AVENGER CREWMEMBER	Air Defense Artillery School
129	14S2/3/40 (T)	AVENGER CREWMEMBER (T)	Air Defense Artillery School
130	57F10	MORTUARY AFFAIRS SPECIALIST	Quartermaster School

Priority	Course MOS and Title		Proponent
131	57F30	MORTUARY AFFAIRS SPECIALIST BNCOC	Quartermaster School
132	57F40	MORTUARY AFFAIRS SPECIALIST ANCOC	Quartermaster School
133	13B10	CANNON CREWMEMBER	Field Artillery School
134	13B30	FIELD ARTILLERY CANNON SECTION CHIEFBNCOC	Field Artillery School
135	13B40	FA PLATOON SERGEANT ANCOC	Field Artillery School
136	75HI0	PERSONNEL SERVICES SPECIALIST	Adjutant General School
137	75H30	PERSONNEL SERVICES SERGEANT BNCOC	Adjutant General School
138	13FI0	FIRE SUPPORT SPECIALIST	Field Artillery School
139	13F30	FIRE SUPPORT SERGEANT BNCOC	Field Artillery School
140	13F40	FIRE SUPPORT SERGEANT ANCOC	Field Artillery School
141	62E10	HEAVY CONSTRUCTION EQUIPMENT OPERATOR	Engineer School
142	54B30	CHEMICAL OPERATIONS SPECIALIST BNCOC	Chemical School
143	77W10	WATER TREATMENT SPECIALIST (TRACKED)	Quartermaster School
144	54B40	CHEMICAL OPERATIONS SPECIALIST ANCOC	Chemical School
145	92G	SUBSISTANCE OFFICER	Quartermaster School
146	31U10	SIGNAL SUPPORT SYSTEMS SPECIALIST	Signal School
147	77F10	PETROLEUM SUPPLY SPECIALIST	Quartermaster School
148	63WI0	WHEEL VEHICLE REPAIRER	Ordnance School
149	55B40	AMMUNITION ANCOC	Ordnance, Missile and Munitions School
150	88H40	CARGO SPECIALIST ANCOO	Transportation School
151	62F10	CRANE OPERATOR	Engineer School
152	11B10	INFANTRYMAN	Infantry School
153	11B30	INFANTRYMAN BNCOC	Infantry School
154	11B40	INFANTRYMAN ANCOC	Infantry School
155	11C10	INDIRECT FIRE INFANTRYMAN	Infantry School

Priority	Course MOS and Title		Proponent
156	11C30	INDIRECT FIRE INFANTRYMAN BNCOC	Infantry School
157	11C40	INDIRECT FIRE INFANTRYMAN ANCOC	Infantry School
158	11H10	HEAVY ANTIARMOR WEAPONS INFANTRYMAN	Infantry School
159	11H30	HEAVY ANTIARMOR WEAPONS INFANTRYMAN BNCOC	Infantry School
160	11H40	HEAVY ANTIARMOR WEAPONS INFANTRYMAN ANCOC	Infantry School
161	11M10	FIGHTING VEHICLE INFANTRYMAN	Infantry School
162	11M30	FIGHTING VEHICLE INFANTRYMAN BNCOC	Infantry School
163	11M40	FIGHTING VEHICLE INFANTRYMAN ANCOC	Infantry School
164	13M10	MULTIPLE LAUNCH ROCKET SYSTEM CREWMEMBER	Field Artillery School
165	13M30	MLRS SECTION CHIEF BNCOC	Field Artillery School
166	13M40	MLRS SECTION CHIEF ANCOC	Field Artillery School
167	13P10	MLRS FIRE DIRECTION SPECIALIST	Field Artillery School
168	13P30	MLRS OPERATIONS/FIRE DIRECTION SECTION CHIEF BNCOC	Field Artillery School
169	13P40	MLRS FIRE DIRECTION SENIOR SERGEANT ANCOC	Field Artillery School
170	45E10	M1A1 ABRAMS TANK TURRET MECHANIC	Armor School
171	45K10	ARMAMENT REPAIRER	Ordnance School
172	45K30	ARMAMENT REPAIRER SUPERVISOR BNCOC	Ordnance School
173	45K40	ARMAMENT/FIRE CONTROL MAINTENANCE SUPERVISOR	Ordnance School
174	45T10	BRADLEY FIGHTING VEHICLE SYSTEM TURRET MECHANIC	Armor School
175	67T4O	UH-60 HELICOPTER REPAIRER SUPERVISOR ANCOC	Aviation Logistics School
176	67U10	CH-47 HELICOPTER REPAIRER	Aviation Logistics School
177	67U30	CH-47 HELICOPTER REPAIRER SUPERVISOR BNCOC	Aviation Logistics School
178	67U40	MEDICAL HELICOPTER REPAIRER SUPERVISOR ANCOC	Aviation Logistics School
179	91C30	PRACTICAL NURSE BNCOC	Academy of Health Sciences
180	91C40	PRACTICAL NURSE ANCOC	Academy of Health Sciences

Priority	Course MOS and Title		Proponent
181	94B10	FOOD SERVICE SPECIALIST	Quartermaster School
182	94B30	FOOD SERVICE SPECIALIST BNCOC	Quartermaster School
183	94B40	FOOD SERVICE SPECIALIST ANCOC	Quartermaster School
184	7IL30	ADMINISTRATIVE SPECIALIST BNCOC	Adjutant General School
185	7IL40	ADMINISTRATIVE SPECIALIST ANCOC	Adjutant General School
186	77F30	PETROLEUM SUPPLY SPECIALIST BNCOC	Quartermaster School
187	73C/D30	FINANCE/ACCOUNTING BNCOC	Finance School
188	31 W40	MOBILE SUBSCRIBER EQUIPMENT COMMUNICATION ANCOC	Signal School
189	52D10	POWER GENERATION EQUIPMENT REPAIRER	Ordnance School
190	52D30	POWER-GENERATION EQUIPMENT REPAIRER BNCOC	Ordnance School
191	91D10	OPERATING ROOM SPECIALIST	Academy of Health Sciences
192	75H40	PERSONNEL SERVICES SERGEANT ANCOC	Adjutant General School
193	93P10	AVIATION OPERATIONS SPECIALIST	Aviation School
194	25V30	COMBAT PHOTOGRAPHER BNCOC	Signal School
195	74C10	RECORD TELECOMMUNICATIONS CENTER OPERATOR	Signal School
196	74C30	RECORD TELECOMMUNICATIONS CENTER OPERATOR BNCOC	Signal School
197	86K10	WATERCRAFT OPERATOR	Transportation School
198	74B10	INFORMATION SYSTEMS OPERATOR-ANALYST	Signal School
199	74B30	INFORMATION SYSTEMS OPERATOR-ANALYST BNCOC	Signal School
200	88L30	WATERCRAFT ENGINEER BNCOC	Transportation School
201	51R10	INTERIOR ELECTRICIAN	Engineer School
202	43M10	FABRIC REP/LAUNDRY SPECIALIST	Quartermaster School
203	62G10	QUARRYING SPECIALIST	Engineer School
204	63H40	TRACK VEHICLE REPAIRER ANCOC	Ordnance School
205	31C10	SINGLE CHANNEL RADIO OPERATOR-MAINTAINER	Signal School

Priority	Course MOS and Title		Proponent
206	31C20	SINGLE CHANNEL RADIO OPERATOR/MAINTAINER BNCOC	Signal School
207	62H10	CONCRETE AND ASPHALT EQUIPMENT OPERATOR	Engineer School
208	67R10	AH-64 ATTACK HELICOPTER REPAIRER	Aviation Logistics School
209	67R30	AH-64 ATTACK HELICOPTER REPAIRER BNCOC	Aviation Logistics School
210	67R40	AH-64 ATK/OH-58D SCOUT HELICOPTER REPAIRER SUPERVISOR ANCOC	Aviation Logistics School
211	13E10	CANNON FIRE DIRECTION SPECIALIST	Field Artillery School
212	13E30	CANNON FIRE DIRECTION SECTION CHIEF BNCOC	Field Artillery School
213	13E40	CANNON FIRE DIRECTION SECTION CHIEF ANCOC	Field Artillery School
214	96D10	IMAGERY ANALYST	Intelligence School
215	96D30	IMAGERY ANALYST BNCOC	Intelligence school
216	51K10	PLUMBER	Engineer School
217	13R10	FIELD ARTILLERY FIREFINDER RADAR OPERATOR	Field Artillery School
218	13R30	FIELD ARTILLERY RADAR SECTION CHIEF BNCOC	Field Artillery School
219	13R40	FA SENIOR RADAR/TARGETING SERGEANT ANCOC	Field Artillery School
220	31L10	WIRE SYSTEMS INSTALLER	Signal School
221	31 L20	WIRE SYSTEMS INSTALLER BNCOC	Signal School
222	67V10 (OH-58)	OBSERVATION/SCOUT HELICOPTER REPAIRER	Aviation Logistics School
223	67V30	OH-58 OBSERVER/SCOUT HELICOPTER REPAIRER SUPERVISOR BNCOC	Aviation Logistics School
224	67S10	OH-580 HELICOPTER REPAIRER	Aviation Logistics School
225	67S30	OH-580 HELICOPTER REPAIRER BNCOC	Aviation Logistics School
226	96B10	INTELLIGENCE ANALYST	Intelligence School
227	96B30	INTELLIGENCE ANALYST BNCOC	Intelligence School
228	68J10	AIRCRAFT ARMAMENT/MISSILE SYSTEMS REPAIRER	Aviation Logistics School
229	68J30	AH-1 AIRCRAFT ARMAMENT/MISSILE SYSTEMS SUPERVISOR BNCOC	Aviation Logistics School
230	67Y40	AH-1 ATTACK HELICOPTER REPAIRER SUPERVISOR ANCOC	Aviation Logistics School

Appendix C

Inventory of Distance Learning Courseware

Inventory of Distance Learning Courseware

The Inventory of Distance Learning Courseware is a computerized listing of courses that are available for use in training by the U.S. Department of Defense or other agencies of the Federal government. The inventory identifies courses within the DoD, other Federal agencies, and commercial producers that the National Guard Bureau (NGB) can obtain for immediate use.

Contents

The inventory contains records on courses in Distance Learning (DL) format. In developing the inventory, HumRRO sought to avoid redundancy with existing databases. For those databases that contain a very large pool of materials, the inventory supplies cross references to appropriate databases. To date, the inventory contains:

- Linkages to other databases with over 14,000 courses.
- Descriptive entries of nearly 300 training materials.

Sources

The primary sources for the DL courseware inventory include:

- Defense Instructional Technology Information System (DITIS)
- Army Training Support Center (ATSC)
- Department of Energy Central Training Academy
- Army Medical Department Center and School (AMEDD) Training Bulletin Board
- Federal Aviation Administration (FAA)
- Army Training Requirements and Resources System (ATTRS)

Secondary and other sources for DL materials include:

- Health professional database
- ARPA/Iowa National Guard
- Office of Educational Research and Improvement
- Commercial CD-ROM Vendors
- CNET Electronic Schoolhouse Network

Inventory Organization

The inventory contains of a record for each course in the Training Materials file that is linked to two additional files: Sponsors and Databases. The Sponsors and Databases files contain individual records that describe, respectively, the developers of the course and the original database source, if applicable. The information in each type of file is described below.

Training materials file: This file contains the title and a description of the course. Key information in each record includes:

Material ID: Record number within the database.
Sponsor ID: Record number of the sponsor.
Title: Name given to the course by its developer(s).
Summary: A brief description of the course content and special features (e.g., video, simulation).
Delivery Method: Technology used in its delivery (e.g., computer based training, video teletraining)
Hardware: Equipment required at classroom site for remote use.
Authoring System: Software or application used in the creation or running of the course.
Length: Estimated classroom hours.
Database ID: Record number within a cross-referenced database.
Job Code: Identifier which links the course to a specific occupation or job (e.g., MOS).
Skill Level: Military career progression code.
Job Title: Name of specific occupation or job.

Sponsors File: This file contains a description of the sponsoring agency or organization. Key components are:

Sponsor ID: Record number of the sponsor.
Organization Name: Official name of the sponsor.
Office Symbol: DoD abbreviation for the Organization.
Point of Contact: Individual responsible for development and/or implementation.
Phone Number: Commercial phone number for the Point of Contact.
DSN: Defense phone number for the Point of Contact.

Databases File: This file contains information on databases which list Distance Learning or computer-assisted courseware. Key components are:

Database ID: Record number of the database.
Database Name: Official name of the Database.
Owner: Organization who holds title to the Database.
POC: Point of Contact
Phone Number: Commercial phone number of the Point of Contact.
DSN: Military phone number of the Point of Contact.
Description: Summary of the types of courses in the database.

Software

These files are linked into a database using Microsoft Access. Access is a relational database management system that uses Windows Version 2.0. Access allows efficient storage of vital information on each course, easy retrieval of information, linking of data to sponsor or database, and generation of reports.

Appendix D

Prototype Survey of Plans, Operations, and Training Officers
Distance Learning Course Conversion Priorities

As the individual responsible for the planning of training for your state's ARNG units, you are undoubtedly well aware of the difficulties in scheduling personnel for in-residence training at ARNG or Regular Army Schoolhouses. This concern, in combination with problems of insufficient numbers of MOSQ personnel, has led the ARNG to invest in distance learning technology that will allow us to deliver training to sites nationwide. Our soldiers will then be able to receive the instruction required to keep them qualified and up-to-date in their particular occupational specialties (and non-MOS related skills) without having to incur the expense associated with travel and TDY pay. At the same time, the hassles involved in trying to schedule such events while avoiding conflicts with soldiers' civilian and other Guard responsibilities can be circumvented.

After examining the range of courses being considered for conversion at this time, we have limited the list to those you see below. This was done based on current MOS density and qualification rates, knowledge of the likelihood that MOS-related tasks will remain stable in the near future, estimates of the amount of course material that could be taught in a DL environment, and keeping in mind on-going conversion activities.

At this juncture, we are seeking your input so that we can make decisions as to which courses should receive immediate consideration for conversion to a distance learning format. Please take a few minutes and examine the list provided below in conjunction with your state's current and near-term training needs and your own sense of what would be most beneficial to you. Then rank order each of the courses shown indicating which would be first, second, third, etc. priority for development. Your input, along with that of the other POTOS, will be given a great deal of merit, so please consider your ratings carefully. If you have questions or comments regarding this survey, feel free to call [person to be determined], between the hours of 8am and 4pm EDT.

Please rank order the courses listed below in terms of the impact it would have on the units in your state if the course were available for personnel on an as-needed basis with no travel requirement. Use the space on the right for comments or qualifications.

Rank	MOS	Course Title	Comment
___	------	Hazardous Materials Handling	_____
___	19K	Motor Transport Operator ANCOC	_____
___	62E10	Heavy Construction Equipment Operator	_____
___	88M30	Motor Transport Operator BNCOC	_____
___	51B10	Carpentry & Masonry Specialist	_____
___	73C10	Finance Specialist	_____
___	63B10	Light Wheel Vehicle Mechanic	_____
___	63B30	Light Wheel Vehicle Mechanic BNCOC	_____
___	71L10	Administrative Specialist	_____
___	92A10	Automated Logistics Specialist	_____
___	55B30	Ammunition Specialist BNCOC	_____
___	54B20/30	Chemical Operations Specialist	_____
___	77W10	Storage/Distribution Specialist (Track 1)	_____
___	54B40	Chemical Operations Specialist ANCOC	_____
___	Other	_____	

APPENDIX E

Distance Learning Sites Required by States

Table E-1
Pennsylvania Sites
Proposed State Plan Revision Based on Eleven Site Scenario, 12 Mar 96 (8 Dec 95 & 1 Site)

No.	Site Location	Full VTT/CAC	Half-Size	Off-Site	Comments
1	Ft Indiantown Gap	x			Also State Hub
2	Wilkes-Barre	x			
3	Johnstown	x		x	Andrews Ctr initially; then 876th Armory
4	Philadelphia (Southampton)	x		x (if WGNAS used as primary)	Alternative is Willow Grove NAS; also consider GSA Philadelphia
5	Pittsburgh	x			171 Air Refuel Pitt LA
6	Erie	x		x	Erie Veterans Home
7	State College		x		112 Air Cntl Sqdn
8	Punxsutawney		x		Off-site Candidate
9	Harrisburg		x		
10	Allentown		x		
11	Washington		x	x	Off-site candidate

<u>DLN SITES WITHIN 50 MILES OF ALL UNIT LOCATIONS, EXCEPT</u>:

New Castle	Possibly serviced from Ohio
Grove City	"
Sharon	"
Bradford	Possibly serviced from New York
Mansfield	"
New Milford	"
Connelsville	

Table E-2
Virginia Sites
Per Major Spears 10 June 1996

No.	Site Location
1	Richmond
2	Virginia Beach
3	Blackstone
4	Manassas
5	Gate City
6	Staunton
7	Danville

Table E-3
West Virginia Sites
Per LTC Podorovich 21 June 1996

No.	Site Location
1	Fairmont
2	Charleston
3	Huntington

APPENDIX F

Air National Guard Warrior Network Sites

AIR NATIONAL GUARD WARRIOR NETWORK SITES

State	Location	Site ID	Operation Status/Date[1]
AK	Eielson AFB	ANG 097	Jun 96
AK	Anchorage , State Hqs	ANG 101	Sep 96
AK	Anchorage (Kulis ANGB)	ANG 006	Jun 96
AL	SRNCOA Gunter AFB (Montgomery)	ANG 212	Jun 96
AL	Hall ANGS (Dothan)	ANG 213	HIA
AL	Birmingham	ANG 005	IC
AL	Gadsden ANGS	ANG 210	IC
AL	Montgomery State HQs	ANG 100	IC
AL	Dannelly Fld (Montgomery)	ANG 004	IC
AR	Little Rock AFB	ANG009	IC
AR	Hot Springs	ANG 214	IC
AR	FT Smith	ANG 010	IC
AR	Little Rock State HQs	ANG 103	IC
AZ	Sky Harbor IAP (Phoenix)	ANG 007	IC
AZ	Tucson	ANG 008	IC
AZ	Phoenix (Papago Mil Res)	ANG 261	HIA
AZ	Phoenix State HQs	ANG 102	IC
CA	Orange ANGS	ANG 222	HIA
CA	Hayward ANGS	ANG 219	IC
CA	Sacremento State Hqs	ANG 104	HIA
CA	Ontario ANGS	ANG 216	HIA
CA	San Diego ANGS	ANG 215	HIA
CA	North Highlands	ANG 217	IC
CA	Moffett Field	ANG 012	IC
CA	Costa Mesa ANGS	ANG 218	Jun 96
CA	Channel Island ANG	ANG 014	IC
CA	Sepulveda ANGS	ANG 220	IC
CA	Fresno ANGB	ANG 011	IC
CA	March AFB	ANG 013	IC
CO	Greeley ANGS	ANG 221	Mar 96
CO	Denver State HQs	ANG 105	IC
CO	Buckley ANGB (Aurora)	ANG 015	IC
CT	Bradley ANGB	ANG 016	IC
CT	Hartford , State Hqs	ANG 106	HIA
DC	Washington State Hqs	ANG107	IC
DE	Wilmington State Hqs	ANG 108	IC
DE	New Castle	ANG 017	IC
FL	Tyndall AFB (1AF)	Uplink	IC
FL	St Augustine State Hqs	ANG 109	IC
FL	Tyndall AFB (SEAD)	ANG 019	IC
FL	Camp Blanding	ANG 260	HIA
FL	Jacksonville IAP	ANG 020	IC
FL	MacDill AFB	ANG 258	HIA
GA	Atlanta , State Hqs	ANG 110	Jun 96
GA	Kennesaw	ANG 224	CANCELLED
GA	Savannah IAP	ANG 022	IC
GA	Dobbins ARB	ANG 021	IC
GA	Hunter AAF	ANG 223	Jun 96

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[1] IC = Installation Complete; HIA = Held In Abeyance

State	Location	Site ID	Operation Status/Date
GA	GlyncoJetport(Brunswick)	ANG226	HIA
GA	Savannah	ANG 227	CANCELLED
GA	Macon	ANG 225	HIA
HI	Wheeler AAF	ANG 203	Jun 96
Hl	Kahului	ANG 205	IC
HI	Hickam AFB	ANG 023	IC
HI	Barking Sands	ANG 206	HIA
HI	Honolulu (FT Ruger) State HQs	ANG 111	IC
HI	Kauai	ANG 202	HIA
HI	Barbers Point	ANG 207	IC
HI	Hilo	ANG 204	IC
HI	Kokee	ANG 201	IC
IA	Des Moines	ANG 030	IC
IA	FT Dodge	ANG 228	IC
IA	Sioux City IAP	ANG 031	IC
IA	Des Moines (Johnston) State HQs	ANG 115	IC
ID	Boise (Gowen Field) State HQs	ANG 112	N/A Use 024
ID	Boise (Gowen Field)	ANG 024	IC
ID	Boise (Gowen Field)	ANG 024	IC
IL	Springfield State Hqs	ANG 113	IC
IL	Capital Municipal Airport	ANG 027	IC
IL	Peoria	ANG 026	IC
IL	Chicago O'Hara IAP	ANG 025	IC
IN	FT Wayne	ANG 028	IC
IN	Hulman Field (Terre Haute)	ANG 029	IC
IN	Indianapolis State HQs	ANG 114	IC
KS	Topeka State Hqs	ANG 116	IC
KS	Forbes Field	ANG 032	IC
KS	McConnell AFB	ANG 033	IC
KY	Standiford Field (Louisville)	ANG 034	IC
KY	Frankfort State HQs	ANG 117	IC
LA	Camp Beauregard	ANG 230	Jun 96
LA	New Orleans State HQs	ANG 118	IC
LA	Belle Chase	ANG 035	IC
LA	Hammond ANGS	ANG 229	IC
MA	Wellesley ANGS	ANG 233	HIA
MA	Otis ANGB	ANG 036	IC
MA	Worcester ANGS	ANG 232	IC
MA	Natick (Reading) State HQs	ANG 121	IC
MA	Barnes Municipal Airport	ANG 039	IC
MD	Baltimore State HQs	ANG120	HIA
MD	Martin State Airport	ANG 037	IC
MD	Andrews AFB (ANGRC)	Uplink	IC
ME	Coos head ANGS	ANG 240	IC
ME	Bangor IAP	ANG 036	IC
ME	Portland ANG	ANG 231	HIA
ME	Augusta , State	ANG 119	IC
MI	Selfridge ANGB	ANG 040	IC
MI	Lansing State HQs	ANG 122	IC
MI	Alpena	ANG 042	IC
Ml	Battle Creek ANG	ANG 041	IC
MN	Minn/St Paul Airport	ANG 044	IC

State	Location	Site ID	Operation Status/Date
MN	Minneapolis State HQs	ANG 123	IC
MN	Duluth IAP	ANG 043	IC
MO	Rosencrans Memorial Airport	ANG 048	IC
MO	Lambert Field Airport	ANG 049	IC
MO	Jefferson City State HQs	ANG 124	IC
MS	Jackson	ANG 046	IC
MS	Gulfport	ANG 045	IC
MS	Key Field (Meridian)	ANG 047	IC
MS	Jackson State HQs	ANG 126	IC
MT	Great Falls IAP	ANG 050	IC
MT	Helena State HQs	ANG 125	IC
NC	Badin	ANG 235	IC
NC	Charlotte	ANG 062	IC
NC	Raleigh State Hqs	ANG 132	IC
ND	Minot	ANG 236	Jun 96
ND	Bismarck State HQs	ANG 133	IC
ND	Hector Field (Fargo)	ANG063	IC
NE	Lincoln IAP	ANG 051	IC
NE	Lincoln State HQs	ANG 127	IC
NH	Pease AFB	ANG 053	IC
NH	Concord State Hqs	ANG 128	IC
NJ	Trenton (FT Dix) State Hqs	ANG 129	IC
NJ	Pleasantville	ANG 054	IC
NJ	McGuire AFB	ANG 055	IC
NM	Kirtland AFB	ANG 056	IC
NM	Sante Fe State Hqs	ANG 134	IC
NV	Reno- Cannon IAP	ANG 052	IC
NV	Carson City State Hqs	ANG 130	IC
NY	Stratton ANGB (Scotia)	ANG 059	IC
NY	Latham State HQs	ANG 131	IC
NY	Niagara Falls IAP	ANG 058	IC
NY	Westhampton Beach (Gabreski Aprt)	ANG 057	IC
NY	Roslyn ANGS	ANG 234	Jun 96
NY	Hancock Field	ANG 060	IC
NY	Griffiss AFB	ANG 096	IC
NY	Stewart AFB	ANG 061	IC
OH	Columbus State Hqs	ANG 135	IC
OH	Swanton (Toledo Express Aprt)	ANG 067	IC
OH	Rickenbacker AFB	ANG 064	IC
OH	Blue Ash ANGS	ANG 237	IC
OH	Mansfield	ANG 065	IC
OH	Camp Perry ANGS	ANG238	Jun 96
OH	Springfield	ANG 066	IC
OH	Zanesville ANGS	ANG 239	HIA
OK	Oklahoma City State HQs	ANG 136	IC
OK	Tulsa	ANG 069	IC
OK	Will Rogers Aprt (Oklahoma City)	ANG 068	IC
OR	Kingsley Field	ANG 070	IC
OR	Camp Rilea	ANG 241	HIA
OR	Salem StateHQs	ANG137	IC
OR	Portland IAP	ANG 071	IC

State	Location	Site ID	Operation Status/Date
PA	Middletown(HarrisburglAP)	ANG074	IC
PA	Willow Grove	ANG 073	IC
PA	State College ANGS	ANG 242	IC
PA	Annville (Indian town Gap)	ANG 138	IC
PA	Piittsburgh IAP	ANG 072	IC
PR	Punta Salinas	ANG 243	HIA
PR	Ramey	ANG 244	HIA
PR	San Juan State Hqs	ANG 139	HIA
PR	Muniz AFB	ANG 075	IC
RI	Slatersville	ANG 245	IC
RI	North Kingston	ANG 076	IC
RI	Coventry ANGS	ANG 246	IC
RI	Providence State HQs	ANG 140	IC
SC	McEntire ANGB	ANG 077	IC
SC	Columbia , State Hqs	ANG 141	IC
SD	Rapid City	ANG 142	IC
SD	Joe Foss Field (Sioux Falls)	ANG 078	IC
TN	Nashville State HQs	ANG 143	IC
TN	Nashville IAP	ANG 081	IC
TN	McGhee Tyson Aprt	Uplink	IC
TN	McGhee Tyson Aprt	ANG 079	IC
TN	Lovell Field (Chattanooga)	ANG 247	HIA
TN	Memphis IAP	ANG 080	IC
TX	Austin State Hqs	ANG 144	IC
TX	LaPorte	ANG 249	HIA
TX	Kelly AFB	ANG 084	IC
TX	Hensley Field	ANG 082	IC
TX	Nederlands	ANG 250	HIA
TX	Ellington ANGB	ANG 083	IC
TX	Garland ANGS,	ANG 248	Jun 96
UT	Salt Lake City	ANG 085	IC
UT	Salt Lake City (Draper) State Hqs	ANG 145	IC
VA	Sandston (R ich mond)	ANG 087	IC
VA	Camp Pendleton	ANG 252	IC
VA	Richmond StateHQs	ANG147	IC
VI	St Croix	ANG 251	HIA
VI	St Croix State Hqs	ANG 146	HIA
VT	Colchester , State Hqs	ANG 148	IC
VT	Burlington IAP	ANG 086	IC
WA	McChord AFB	ANG 089	IC
WA	Paine Field (Everett)	ANG255	HIA
WA	Spokane ANGS	ANG 256	HIA
WA	Fairchild AFB	ANG 088	IC
WA	Bellingham	ANG 257	HIA
WA	Seattle	ANG 254	HIA
WA	Cheney ANGS	ANG 253	HIA
WA	Tacoma (CP Murray), State Hqs	ANG 149	IC
WI	Madison State Hqs	ANG 151	IC
WI	Volk Field	ANG 094	IC
WI	Milwaukee (Gen Mitchell Fld)	ANG 093	IC
WI	Madison (Truax Field)	ANG 092	IC

State	Location	Site ID	Operation Status/Date
WV	Charlestown	ANG 090	IC
WV	Martinsburg	ANG 091	IC
WV	Charlestown State HQs	ANG150	N/A use ANG 090
WY	Cheyenne , State Hqs	ANG 152	IC
WY	Cheyenne	ANG 095	IC

APPENDIX G

**Distance Learning Course Offerings
from North American Colleges and Universities**

Distance Learning Course Offerings
from North American Colleges and Universities

	Accounting	Agriculture	Allied Health	Business	Chemistry	Computer Science	Criminal Justice	Engineering	Environmental Health	Human Resources	Int'l Relations	Languages	Liberal Arts	Library Science	Nursing	Pharmacy	Social Work	Space Studies	Teacher Ed
Acadia University																			✓
Arizona State Univ.						✓		✓											
Ball State Univ.	✓			✓															✓
Cal Inst Integral of Studies													✓						
Cal State, Chico						✓													✓
Cal State, Dominguez Hills								✓											✓
Cal State, LA																			✓
Cal State Northridge																			✓
Chadron State Coll				✓															✓
Coll of Great Falls																	✓		
CO State Univ	✓			✓		✓		✓											✓

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	Accounting	Agriculture	Allied Health	Business	Chemistry	Computer Science	Criminal Justice	Engineering	Environmental Health	Human Resources	Int'l Relations	Languages	Liberal Arts	Library Science	Nursing	Pharmacy	Social Work	Space Studies	Teacher Ed
Corpus Christie State Univ															✓				
Eastern Oregon State Coll																			✓
Florida Atlantic Univ				✓		✓		✓											✓
George Washington Univ				✓		✓		✓											✓
Georgia Inst. of Technology								✓											
Governors State Univ			✓										✓						✓
Grand Valley State Univ																			✓
Indiana State Univ									✓	✓									✓
Iowa State Univ of Science & Tech		✓						✓											✓

	Accounting	Agriculture	Allied Health	Business	Chemistry	Computer Science	Criminal Justice	Engineering	Environmental Health	Human Resources	Int'l Relations	Languages	Liberal Arts	Library Science	Nursing	Pharmacy	Social Work	Space Studies	Teacher Ed
Kansas State Univ		✓						✓											✓
Lehigh Univ								✓	✓										✓
Murray State Univ	✓		✓	✓											✓				✓
National Tech Univ				✓				✓	✓										
NJ Inst of Tech				✓	✓	✓		✓	✓			✓							
NY Univ				✓		✓													
ND State Univ																			✓
OK State Univ	✓			✓		✓		✓					✓						
Old Dominion Univ	✓		✓	✓		✓		✓	✓				✓		✓				✓
Oregon State Univ								✓	✓										✓
PA State Univ			✓					✓											
Portland State Univ																	✓		✓
Purdue Univ								✓											

	Accounting	Agriculture	Allied Health	Business	Chemistry	Computer Science	Criminal Justice	Engineering	Environmental Health	Human Resources	Int'l Relations	Languages	Liberal Arts	Library Science	Nursing	Pharmacy	Social Work	Space Studies	Teacher Ed
Regent University	✓			✓															
Rensselaer Polytechnic Inst				✓		✓		✓											
Rice Univ						✓		✓											
Rochester Inst of Tech						✓													
Salve Regina Univ	✓			✓			✓				✓		✓						
San Jose State Univ																			✓
Southern Methodist Univ						✓		✓											
Southern OR State Coll				✓									✓						✓
TX Tech Univ																			✓
Univ of Alabama				✓		✓		✓											
Univ of Alaska																			✓

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University	Accounting	Agriculture	Allied Health	Business	Chemistry	Computer Science	Criminal Justice	Engineering	Environmental Health	Human Resources	Int'l Relations	Languages	Liberal Arts	Library Science	Nursing	Pharmacy	Social Work	Space Studies	Teacher Ed
Univ of AZ								✓						✓		✓			✓
Univ of Calgary								✓											✓
Univ of CA, Santa Barbara								✓											
Univ of CO, Boulder				✓		✓		✓	✓										
Univ of CO, CO Springs	✓							✓										✓	✓
Univ of DE								✓											
Univ of Houston								✓					✓						✓
Univ of Idaho						✓		✓											
Univ of IL								✓											
Univ of Iowa						✓							✓		✓		✓		✓
Univ of KY		✓						✓						✓	✓	✓			✓

	Accounting	Agriculture	Allied Health	Business	Chemistry	Computer Science	Criminal Justice	Engineering	Environmental Health	Human Resources	Int'l Relations	Languages	Liberal Arts	Library Science	Nursing	Pharmacy	Social Work	Space Studies	Teacher Ed
Univ of MA				✓		✓		✓	✓						✓				
Univ of MO						✓		✓											
Univ of MT	✓																		✓
Univ of NB				✓		✓		✓											✓
Univ of New Brunswick				✓											✓				✓
Univ of NC														✓					
Univ of ND																			✓
Univ of SC			✓	✓			✓	✓					✓	✓	✓		✓		✓
Univ of TN							✓	✓											✓

Distance Learning Degree Programs (MA)
from North American Colleges and Universities

	Aeronautics	Agriculture	Business	Computer Science	Corrections Admin	Education	Engineering	Health Svcs Admin	HR Development	Instructional Tech	Library Science	Nursing	Occupational Safety	Operations Rsch	Pharmacy	Physics	Public Relations	Social Science	Statistics
Arizona State Univ							✓												
Ball State Univ			✓																
Boise State Univ										✓									
Cal State, Chico				✓															
Cal State, Dominguez			✓																
Cal State, Northridge							✓												
Cal State, Sacramento			✓																
Chadron State Coll			✓																
CO State Univ		✓					✓												✓
Corpus Christi State												✓							
Eastern OR State Coll						✓													
Embry Riddle Aeronautical Univ	✓																		

	Aeronautics	Agriculture	Business	Computer Science	Corrections Admin	Education	Engineering	Health Svcs Admin	HR Development	Instructional Tech	Library Science	Nursing	Occupational Safety	Operations Rsch	Pharmacy	Physics	Public Relations	Social Science	Statistics
Florida Atlantic Univ				✓			✓												
Florida State Univ							✓												
George Washington Univ				✓			✓			✓									
GA Inst. of Technology							✓												
Indiana State Univ									✓				✓						
Iowa State Univ of Science & Tech		✓					✓												
Lehigh Univ							✓												
Mary Washington Coll			✓				✓												
Murray State Univ				✓								✓							✓
National Tech Univ							✓									✓			
ND State Univ						✓													
N AZ University						✓													

	Aeronautics	Agriculture	Business	Computer Science	Corrections Admin	Education	Engineering	Health Svcs Admin	HR Development	Instructional Tech	Library Science	Nursing	Occupational Safety	Operations Rsch	Pharmacy	Physics	Public Relations	Social Science	Statistics
OK State Univ			✓				✓												
Old Dominion Univ							✓					✓							
Portland State Univ			✓																
Purdue Univ							✓												
Regent Univ			✓																
Rensselaer Polytechnic Institute			✓	✓			✓												
Rice Univ				✓			✓												
Rochester Institute of Technology				✓			✓												
Saint Joseph's Coll								✓											
Salve Regina Univ					✓														
Southern Methodist Univ				✓			✓							✓					
Southern OR State Coll						✓													

	Aeronautics	Agriculture	Business	Computer Science	Corrections Admin	Education	Engineering	Health Svcs Admin	HR Development	Instructional Tech	Library Science	Nursing	Occupational Safety	Operations Rsch	Pharmacy	Physics	Public Relations	Social Science	Statistics
Stanford Univ				✓			✓												
Syracuse Univ			✓								✓	✓						✓	
Texas Tech Univ	✓					✓	✓												
Univ of AL											✓						✓		
Univ of AK						✓													
Univ of AZ							✓				✓				✓				
Univ of CA, Santa Barbara				✓			✓												
Univ of CO, Boulder	✓		✓	✓			✓												
Univ of Houston							✓												
Univ of Idaho							✓												
Univ of IL, Urbana Champaign							✓												
University of Iowa				✓															

	Aeronautics	Agriculture	Business	Computer Science	Corrections Admin	Education	Engineering	Health Svcs Admin	HR Development	Instructional Tech	Library Science	Nursing	Occupational Safety	Operations Rsch	Pharmacy	Physics	Public Relations	Social Science	Statistics
Univ of KY						✓	✓												
UMASS, Amherst							✓												
Univ MO, Rolla				✓			✓												
Univ of MT			✓																
Univ of NB, Lincoln			✓	✓			✓												
Univ of New Brunswick						✓													
Univ of ND			✓																
Univ of SC			✓				✓				✓								
Univ of TN, Knoxville							✓												
Univ of VA							✓												
Univ of WI, Madison							✓												
University of WY			✓			✓													
Utah State Univ			✓						✓										
VA Polytechnic							✓												

	Aeronautics	Agriculture	Business	Computer Science	Corrections Admin	Education	Engineering	Health Svcs Admin	HR Development	Instructional Tech	Library Science	Nursing	Occupational Safety	Operations Rsch	Pharmacy	Physics	Public Relations	Social Science	Statistics
Western MI Univ			✓																
WV University												✓							